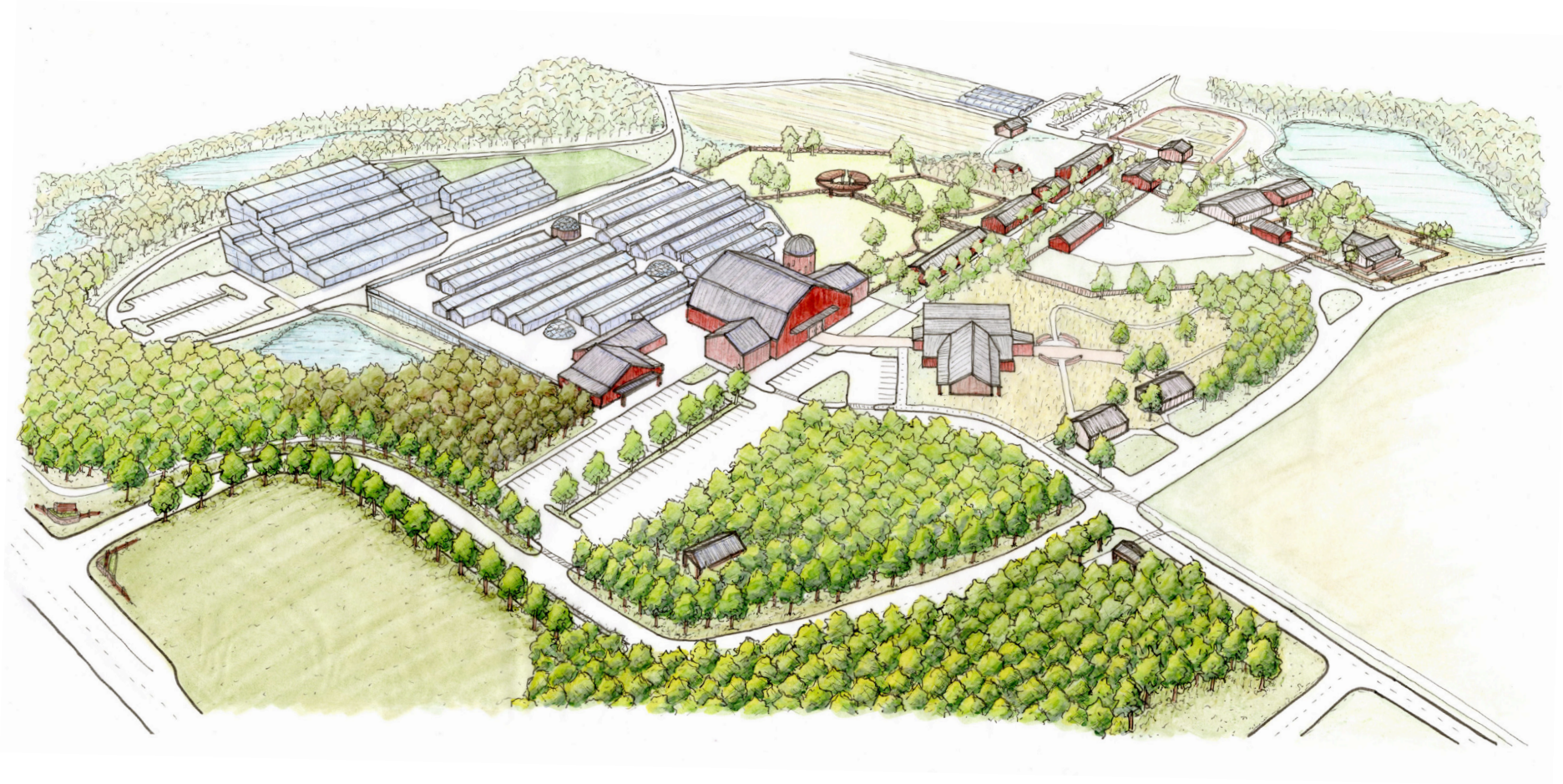
# Sunset Hill Farm and Park

## A Better Park, A Better Life

sustainable food and recreation to insure a future of health and wellness

775 Meridian Road, Valparaiso, Indiana



Kevin M Snyder

May 2013

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LA 404: Landscape Architecture Comprehensive Project


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## Abstract

Porter County Indiana's Department of Parks and Recreation is updating the master plan for 238-acre Sunset Hill Farm County Park. The large public park is located in the unincorporated area between Valparaiso and Chesterton in Northwest Indiana. The need has been revealed, by both the local community and the parks department, for an up-to-date expansion and development plan that focuses on the park's future design and build-out. The park is unique because of its rich history, great location, diverse ecological communities, and its vast potential for development and enhancement to better serve the community with a wide variety of outdoor activities that are not currently available to the community. The proposed project will set a new standard of sustainability that incorporates the character of the historical and cultural landscape.

Because of the research done for this project, Sunset Hill will exemplify design that reflects historical qualities in up-to-date design, connects urban and natural fabric to improve the quality of life of local residents, enhances and introduces new park features and activity areas, and qualifies for LEED and SITES certifications in regards to ecological design. The foundation of the research is based on academic writings, case studies, interviews, questioners, and direct observation. The solid base of information will result in a park design that can be used as a precedent for other designers who are working on projects for large public parks. This sustainably certified design learns from the past to create a future for Sunset Hill Farm County Park.

# Acknowledgements

I first want to thank my fiance, Maggie, and my parents, Mike and Denise, for the constant support and motivation. None of the things I have accomplished would have been possible without you all. Love you. I hope I can continue to make you proud of the things I do.

Secondly, I want to thank all the educators that I have had in my life. I have met many great people who have shaped me into the person I am today. Specifically I want to thank many of my professors at Ball State University. I have grown as a person and an academic since our paths have crossed. Special recognition to Les Smith, Tony Costello, and Scott Truex. Scott was my advisor for this project, along with John Motloch and Chris Malow who were the faculty to oversee this studio.

Finally, I want to thank Ray Joseph and the entire staff at Porter County Parks and Recreation for giving me the chance to work with them over the past summer and for their cooperation with this project over the past two semesters.

I am glad to be finished with this project, as it has carried on over the past year. There is still much more that I wish I could have accomplished, but the things I have learned have been great. I look forward to this next stage of my life as I move on from school and out into the working world. I hope that someday I have the opportunity to came back and teach young designers at the collegiate level. I hope that I can gain some valuable life experiences and make a difference with the designs I create.

Thank You!

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# Introduction

The community of Porter County, Indiana, is calling for improvements and additions to the underdeveloped 238-acre Sunset Hill Farm County Park, located in the semi-rural fringe of Valparaiso. Since the need has been identified, an up-to-date expansion and development plan focusing on the park's future design and build-out is much needed. The park's land and its surrounding context have unique, rich histories, diverse ecological communities, vast potentials for enhancements, and a great location to serve the community with a wide variety of outdoor activities not currently available.

The goal of this research is to discover, develop, and illustrate a potential park design for Sunset Hill that fulfills local residents' desires, plus the vision set forth by Porter County's Department of Parks and Recreation. The design objectives will drive future improvements to transform the park into a regional destination, demonstrating an example of a public amenity that addresses critical land use and design issues confronting cities throughout the Midwest. It will be an example of sustainable living led by sustainable landscape design. Residents of Porter County and Valparaiso are calling for environmentally sensitive options that foster a healthy, growing, and sustainable society, while still maintaining the integrity of the semi-rural park's rich history.

This research and park design project will assess the park's history and significance as a cultural landscape. The project will also determine what existing features should be preserved and/or enhanced and why. Furthermore, this project seeks to develop and implement methods to potentially determine what new features should be added to the park that will expand and attract community engagement and outdoor activity. Design alternatives generated from this research and design study will ensure the future park, its landscape, and its physical structures are developed in environmentally conscious ways to qualify for Leadership in Energy and Environmental Design (LEED) and Sustainable Sites Initiatives (SITES) certifications.

The end product of this study will be a plan for expansion and improvements at Sunset Hill that address large and small-scale issues. At the larger scale, this project will connect the park to its immediate semi-rural context, adjacent natural and wildlife systems, and the nearby urban fabric of Valparaiso. At a smaller scale, this project will illustrate specific details and plans for new site features and activity area improvements, like native landscape and formal park plantings. This park design initiative will always consider the past to ensure any new developments reflect and honor the history of the land, while continuing to progress towards the future to integrate and highlight sustainable landscape design principles.

# Section One :
# Introduction to the Problem

# 1.1 : Statement of the Problem

The community of Porter County, Indiana, is calling for improvements and additions to the underdeveloped 238-acre Sunset Hill Farm County Park, located in the semi-rural fringe of Valparaiso. Since the need has been identified, an up-to-date expansion and development plan focusing on the park's future design and build-out has been developed. The park and its surrounding context have unique, rich histories, diverse ecological communities, vast potentials for enhancements, and a great location to serve the community with a wide variety of outdoor activities not currently available.

This project identifies, develops, and illustrates a potential park design for Sunset Hill that fulfills local residents' desires, and the vision set forth by Porter County's Department of Parks and Recreation. The design objectives will drive future improvements to transform the park into a regional destination, and demonstrate an example of a public amenity that addresses critical land use and design issues confronting cities throughout the Midwest. The parks redesign demonstrates an example of sustainable living led by sustainable landscape design. The residents of Porter County and Valparaiso are calling for environmentally sensitive options that foster a healthy, growing, and sustainable society, while still maintaining the integrity of the semi-rural park's rich history.

This project assess the park's history and significance as a cultural landscape to determine what existing features should be preserved and/or enhanced and why. Furthermore, this project develops methods to determine what new features should be added to the park to expand and attract community engagement and outdoor activity. The design alternatives generated for this project will help to ensure the park, its landscape, and its physical structures are developed in environmentally conscious ways to qualify for Leadership in Energy and Environmental Design (LEED) and Sustainable Sites Initiatives (SITES) certifications.

The parks plan for expansion and improvements at Sunset Hill addresses large and small-scale issues. At a larger scale, this project connects the park to its immediate context, adjacent natural and wildlife systems, and the nearby urban fabric of Valparaiso. At a smaller scale, this project illustrates specific details and plans for new site features and activity area improvements, like native landscapes and formal park plantings. This park design considered the past to ensure any new developments reflect and honor the history of the land, while continuing to progress towards the future to integrate and highlight sustainable landscape design principles.

# 1.2 : Subproblems

- How can the design guidelines reflect the past culture and history of the park and its surrounding context to create character and a sense of place that respects the people and the land? How can these cultural and historical aspects be incorporated into a park design that exemplifies sustainable landscape architecture design principles and techniques?

- How can ecological design and other sustainable landscape design techniques be implemented to create practical and active connections between this park and its surrounding natural and urban fabric? How can these design techniques be applied in ways that create social, mental, and physical benefits to improve the overall quality of life for residents in Porter County?

- Which existing park features should be preserved and/or enhanced, and what features should be introduced to improve how the park functions, meets the community's needs, and attracts a large enough user group? What makes those identified features appropriate and sustainable for this setting?

- Which sustainable design techniques and land management practices will help Porter County Parks Department achieve its goal of obtaining LEED and SITES certifications? What qualifies the chosen design elements to work in the application at Sunset Hill and also score points towards earning the desired environmental ratings?

# 1.3 : Hypotheses

- To be successful and accepted by the Porter County community, any new or improved site feature must reflect the property's agricultural history. The "historical character" of the design elements in the park will be best expressed by gaining a solid understanding of the history the property and its surrounding context. This would be best discovered through interviews and surveys with local residents and park users, and also through documents, writings, and photographs, relating to the property and the surrounding context.

- The plan reaches beyond Sunset Hill by implementing sustainable landscape architecture design features like stormwater management structures, native plantings that create natural habitats, and trail systems that increase walkability and reduce dependency on cars. This public space will connect and expand the natural and urban fabric of the area. A diverse, flexible plan will also improve accessibility and quality of life for all the residents of the Porter County community by improving air quality, water quality, and natural habitats that support healthy ecosystems.

- To make Sunset Hill a regional destination spot in Northwest Indiana, existing elements must be examined to determine which park features should be preserved, enhanced, or added to attract a large enough user group. To determine what features should be included in this park, other regional destination parks and their features must be studied. Some existing features that can be expanded and enhanced are the primitive campground, bandshell, and hiking trails and trailheads. Other features like a community/visitor information center, restrooms, and a concession area are entirely absent. Accurately assessing these features is key to designing a successful plan for the future park.

- Implementing sustainable ecologically sensitive design techniques like improving water quality, lowering energy and resource consumption, offsetting carbon emissions, reducing waste, providing habitats for wildlife, and producing food are all techniques that earn credit towards SITES and LEED certifications. This is one of the major goals of Sunset Hill's development plan set out by Porter County's Department of Parks and Recreation.

# 1.4 : Delimitations

- Although funding is overwhelmingly the number one issue with the development of Sunset Hill and most other public parks, the total cost, the source of funds, nor a specific detailed breakdown of costs for the proposed elements are addressed in this project.

- Part of this project will addressed creating connections to the surrounding natural and urban fabric of the area, which resulted in only conceptual plans that explain those areas Sunset Hill is connecting to, but fully detailed designs for those areas that reach beyond the park's boundaries were not included.

- Since Sunset Hill is part of the Porter County parks system, it is not the only park that the department controls and maintains; therefore, this park design only addressed the atypical active and passive outdoor activities, and not the typical park ball fields because the other parks in their system provide those opportunities.

- While creating a sense of place and character for Sunset Hill was one of the main driving factors for the development of the park, many of these significant features would be reflected in architectural elements that would be updated or added to the site. Some of these features are reflected in conceptual form, but the pure architectural elements were not addressed in this project.

- Specific types of habitat creation and restoration were discussed and included as part of the design concept, but fully developed, large-scale planting plans were not developed for those areas.

- Although LEED and SITES ratings were addressed and their guidelines directed the entire design process, an actual calculation to determine the specific rating for the project was not done.

# 1.5 : Assumptions

- This project will be done in collaboration with Porter County's Department of Parks and Recreation, to help provide guidance and direct contact to the community and resources tied to Sunset Hill Farm County Park.

- To effectively meet the vision and goals set out in the development plan, this project must include other professionals to assist with the engineering and architectural facets of the project, and then contractors to effectively carry out construction.

- The communities of Porter County will continue to demonstrate a growing desire for improvements at Sunset Hill Farm County Park to provide more outdoor recreation options. Local residents will also continue to be involved in the process of identifying what features they would like to see developed within the park.

- Structural elements already located on the site are in a suitable condition to be reused and incorporated in the design for new activities, or they can endure being retrofitted to serve a new function for the Sunset Hill Farm County Park and its users.

- The creation or restoration of any natural habitats or plantings, and the preservation of existing habitats already on the property, will require sufficient ongoing maintenance, either by the parks department staff or an outside contractor, to maintain, monitor, and control invasive species.

# 1.6 : Statement of Significance

At one time, public parks were a growing public entity desired by every community, but as time progressed, public funds began to shrink and parks lost support in favor of other public amenities. However, today's green movement has brought resurgence in parks and public greenspaces around the world. Communities demand access to public open space, where outdoor activities can take place. Today, park designers face two major challenges. First, the planning and design of public parks is stuck in past trends and happens without enough consideration towards the effect the development will have. Second, most public park systems are underfunded, which limits their ability to adequately meet the needs of today's society. Public demand is strong enough to force changes, but the element we are missing is a design concept on the cutting edge of today's green movement, that also meets traditional ideas of the communities where the parks will be developed.

Over recent years, Porter County residents have demonstrated a growing demand for enhancements to be made to Sunset Hill Farm County Park. With the cooperation of Porter County's Department of Parks and Recreation, and other professionals, a rough vision has been developed for the park, directly relating to requests from community members and today's goal of living more sustainably. All stakeholders involved have demonstrated a desire for establishing this park as a regional destination with environmentally conscious options to reflect a society that is healthy, growing, and sustainable. This is an ideal site for creating such a regional destination because of the site's rich history, diverse ecological communities, and existing park features, plus the opportunity for developing new features. By examining these three key factors more closely, a plan and new set of guidelines has been created to reveal how to best develop the park for future success. By respecting and drawing influences from nature and the past, and by incorporating all site-specific factors into a single plan, any new developments can have the necessary appeal to activate the green public parks movement and improve the quality of life for people and nature.

# 1.7 : Literature Review

## Introduction

Sunset Hill Farm County Park in Porter County, Indiana is in the process of undergoing an update to its master plan. The 238 acre property has a rich history and fast potential to be a great community asset for northwest Indiana. Research findings from this review of literature will serve to direct the development for a high level of quality for the comprehensive design of this park. Findings that address the future of large destination parks and sustainable landscape developments will be adapted to fit this project and ensure its long-term viability. The research directly relates to sustainable landscape design techniques focusing largely on the use of plants in a public setting. All design decisions will be supported with ecological sustainability as the main driving feature, with local character as a secondary factor. This is a real project that has real possibilities, so nothing can be overlooked or understudied, to ensure that this project can be an influential tool in creating positive changes. Hopefully, other planners and designers can apply this research to enhance their own future projects that may have similar features.

## 1.7.1 : Review of Work Related to Historical and Cultural Landscapes

Patricia Tabor traces the history of Sunset Hill Farm County Park in her short publication titled Sunset Hill: From Farm to Park (1997). Sunset Hill was a gift to the Porter County Parks Department in 1983, from Robert Heffron Murray, known to most people as "Colonel Murray," who was a businessman by profession but a farmer by heart (Tabor 4). This gift of Sunset Hill Farm to Porter County was actually the driving force in the creation of the Parks Department (14). Before this time there was no Parks Department, which makes this park is significant to the people of the county. The property began its legacy as a farm in 1934 and grew through 1954 until it reached its present total of 238 acres, when it officially opened in August 1993 (4).

The hillside where Colonel Murray constructed his first house is known as the North American Divide; meaning that water running off the northern slopes is beginning its journey to the Atlantic Ocean, while water on the other side of the hill runs south to the Gulf of Mexico (6). The fact that the property is on the North American Divide makes it one of the highest points in the county, with several topographical changes to open up vantage points to take advantage of the good views. These hills were originally non-tillable sandy soils, so to stabilize the slopes, Colonel Murray replanted the woods with over 36,000 pine trees, many of which are still clustered throughout that area (6).

Through the years, he constructed many other structures around the property, many of which still stand today and should be preserved and acknowledged. The main barn was constructed in 1937, and then reconstructed in 1954 after the original burned down (7). The second structure also burned down and was never reconstructed. Today, the park system is currently raising money to "raise the barn." It is a plan to build a new building that resembles a barn but functions as a multi-purpose building for everyday park activities that meet today's needs.

Another major participant in the history of the park is the Northern Indiana Historical Power Association (NIHPA). NIHPA

is a club that displays and promotes the preservation of antique farm equipment like tractors, steam traction engines, and gas powered stationary engines. The association leases the buildings from the parks department, where they hold their monthly meetings and annual festival. Although NIHPA, at one point in time was in charge of park maintenance between periods of changing ownership and in times of low funds and manpower for the park, they merely lease the buildings from the parks department and do not own any of the land or buildings. This has been a topic of much debate over recent years with talk of changes and improvements coming for the park. Many NIHPA members feel like they own and have control of what goes on at the park. It is a delicate situation that must be addressed during this project, because while their input is important, they do not have the ultimate say in what the future of the park will be.

After opening in 1993, the first festival, "Music on the Hill," was held that September. This event is no longer going on, but could be reintroduced with possible improvements being made to the amphitheater. Other seasonal festivals like Winter Lights and Spring-Out have been introduced and draw some of the largest crowds to the park each year. Winter Lights is obviously their winter festival that includes putting up Christmas lights around the park, a fireworks show, arts and crafts, and live music to have people come in and celebrate the season. Spring-Out is their spring festival which is welcomes in warmer weather with music, plays, crafts, food, and wagon rides. There is no official fall festival hosted by the parks department, but NIHPA hosts their fall festival that draws thousands of people to the park to show-off historic farm equipment and practices. More events have been tried in the past, and new ones could be introduced if improvements are made to the park.

Another feature lost from the original park was a community garden attended by prisoners whose food was distributed to local food pantries (13). Over the last couple of years, the community garden idea has been reintroduced, which should be expanded to increase its effectiveness and popularity. Because the property has farming roots related to food production, livestock could also be included in this update. Colonel Murray raised chickens for eggs and cattle for their milk, plus the typical crops and livestock feed (9). This part of the park's history can be brought out in the character of additional site features and in other educational elements. Also in the last couple of years the parks department has begun to acquire some animals which could be used in a petting zoo. The park's rich history has much to offer to its future development.

When a site has a long rich history that the people of the community want to make sure it retains, the issue of preserving rather than developing comes into conversation. With a cultural landscape like Sunset Hill this is a topic that has been brought up in meetings by members of the community. There seems to be by far a larger number of community members that rather see the park developed than preserved or restored to a previous state, but it is a topic than warrants some attention. So, what is a cultural landscape and do these landscapes always need to be preserved? This is a topic that Arnold Alanen and Robert Melnick cover in their book Preserving Cultural Landscapes in America (2000). By the tile it is evident that they are studying the topic of preservation of these kinds of places, but there is nothing that says that this is required

or the best decision for a site; it simply discusses the history of the practice, why it is important, and why it is done. At Sunset Hill, the assumption is that the park will proceed with development, but it will draw elements from the past that call out its history. The development will be a hybrid form of development that mixes new sustainable practices with historic cultural elements of the sites past.

Cultural landscapes are basically any pieces of land that human activity as affected (Alanen, 3). No obviously this is a little broad and can basically applied to any site in the world, so it can be more precisely defined as somewhere between the two extremes of complete development and wilderness; its and environment that clearly displays human manipulation of natural elements (3). Some examples are gardens and parks. When it comes to preserving these landscapes, some features that are generally looked at as important features of the site to preserve include the structures/buildings and their setting, fences, walls, bridges, signs, lights, benches, fountains, and sculptures (3). However, since Sunset Hill will not be a preservation of the landscape, these important features will help to identify and create character for new elements to the site. It is not to say that some features of the site will not be preserved, it just means that the history of the site has been considered and will be respected in regards to new developments to the park. Many times these people associate cultural landscapes with projects that are created by professional designers or engineers, but more often than not cultural landscapes are ordinary, vernacular landscapes that have evolved over long periods of time with multiple layers of cultural behaviors worked into them to shape its present state (5). Sunset Hill is has had a little planned development as a part of the parks department, but for the most part it is basically a vernacular landscape that has just evolved with time as it has gone through different periods of ownership.

In the same book a section titled Selling Heritage Landscapes which is written by Richard Francaviglia, covers the aspect of cultural landscapes that are tied to the history of the country. He says that over the past thirty years Americans have developed a great appreciation for things that have shaped the American landscape, and now there are tourists who seek out those places that convey that history (44). Heritage landscapes are defined here as places or depiction of places that look and feel like they did during a certain historical period that contain buildings, sites, and other features that were associated with time period (45). In order for these places to be marketed, they have to be associated with recognized patterns of activity in a place or time, which is applicable to Sunset Hill (47). Sunset Hill is especially significant in its Midwest setting because of the agricultural roots of the region. It is a historic farmstead that is now open to the public that uses it for some related uses and some non-related recreational uses which tie to its natural history.

Francaviglia classifies heritage landscapes into six different categories, which could be used as the base method for the direction that this project will take to preserving the history of the site. The first type is passively preserved, which are unintentionally preserved through continued traditions of use, ownership, and design (49). This reflects a community that does not have the ability or the desire to change like a rural Amish farm (49). The second type of heritage landscapes are actively preserved which means that they are consciously preserved to maintain their historic charm (52).

These landscapes are typical of historic districts because they are the result of preservation based legislation based on the past (52). A third type is restored heritage landscapes which have had historic features reconstructed or removed later intrusive features to regain the original character (55). These sites are often educational and serve a commercial purpose where the restorers often are looking to regain that heritage and prestige, often associated with tourism (55). The forth type is an assembled landscape in which historic designs and features are constructed in a way to achieve a look of antiquity (58). Like the restored heritage landscapes, these sites are often educational and may provide settings in which historic crafts are practiced (58). The fifth type of heritage landscape is the imagineered which are landscapes that are assembled to appear historic, but they only portray essence than constructed to recreate it (61). Theme parks are an example of this type of landscape; often these landscapes are for entertaining or commercial use, but they can be instructional or educational (61). The final type of heritage landscape that is classified here is the imagically preserved which are images, models or dioramas that recreate a vanished landscape that is made for viewing instead of entering (64). These are made for educational and tourism purposes (64). Surely all of these six types of heritage landscapes could be applied here, but only a couple of them are appropriate for this setting and follow the design objectives that have been set out for the park. It seems like the most appropriate technique to apply to Sunset Hill is the assembled heritage landscape, because it is just drawing from the history to create new features that fit with the rest of the site. Other aspects of actively preserved and restored landscapes could be put into use here, but to solely follow just one of these methods will not allow the park to develop as desired.

The rich history of the site leads to many opportunities for development to park. This is important to the community as well as Porter County Parks Department. By understanding the past history of the property a unique character and feel can be created for the park which may help to attract tourist on top of local residents, which is important to creating a regional destination like the parks department desires. The end product will reflect the natural and agricultural roots of the property which are combined with some of the latest sustainable design techniques to make the park meet the needs all parties involved for many years to come.

### 1.7.2 : Review of Work Related to the Benefits of Connectivity

With so much activity surrounding Sunset Hill Park, plenty of physical connections can be made to create the connectivity a successful park needs. These connections must be made on many levels, including natural, urban structure, and mental/emotional. Everything designed in the project must have a purpose to establish appropriate relationships between the complex systems and elements in the park. The natural features, use areas, and structures all must work together both within the park and with existing systems around the site (Dahl 13). Because the design must extend beyond the boundaries of the park, the proposed projects will ensure the park does not cause flooding downhill or cause traffic jams on nearby streets (14). The opposite can be said as well. By understanding the surrounding context, the park redesign can

avoid locating the picnic area downwind of bad odors, or other influences that would disturb the park's serenity (14). This project should identify which streets could absorb an increase in auto traffic, what existing trail systems could be connect to, and what ecological systems are surrounding the park so those features can work in unison with the park.

So many people take parks for granted. Most people understand open greenspaces play an important role in suburban and urban settings, but when compared to roads, bridges, sewers, etc., parks become expendable. One interesting thing that people do not realize is that those other built elements diminish over time, while carefully maintained parks become more beautiful (Garvin 11). Parks directly or indirectly influence every aspect of our lives. Many great landscape designers through history have shared this same thought. Frederick Law Olmsted believed that parks enhance and improve the public's health and well-being and set the framework for sustainable living environments (13). William Whyte once said, "The goal of a good public space should be to promote the widest possible use of enjoyment" (qtd. in Miller 59). A park is the link between nature and urban civilization, a place where people go for a wide variety of reasons: enjoyment, relaxation, and escapes from everyday busy lives to enjoy the scenery (Beazley 27). According to Alexander Garvin, well designed and maintained public parks are one of the few places where people of every race, class, and income come together (Garvin 38). With such a diverse population using parks, they play a critical role in sharing social values. Sunset Hill is no different. The park serves a wide range of people representing different ages, races, and reasons for being there. All of these individuals shape the development of the park, but at the same time the park also shapes their experience. This new park design must plan to foster this mutual working relationship.

As Deborah Karasov discusses in the book The Once and Future Park (1993), many children in our country experience nearly identical landscapes each and every day. These suburban landscapes contain large front lawns and grass-lined freeways. Most are identical regardless of where they are. There is no sense of place, no connection to where these children live. Under these conditions, parks become an opportunity to artistically express a variety of spatial and visual experiences (as ctd. in Muschamp 8). Michael Pollan identifies an interesting point about American culture in the book Nature, Landscape, and Building for Sustainability (2008). He believes it is interesting how the two most important contributions America has made to the history of landscapes are the front lawn and the wilderness preserve (Saunders 66). America is a society which cannot decide if it would rather dominate nature or worship it (66). Pollan believes that because we cannot picture these two ideas coexisting, we cannot picture nature and culture working together, so we go to one extreme or the other and commit solely to one idea (67). This is where it seems that parks can be the middle landscape. Pollan is writing about how future gardens can be this middle landscapes, but the thought can be transferred to relate to parks as well. He describes the middle landscape as a place that compromises or equally balances nature and culture (67). Parks already are becoming ideal places where all of society feels welcome and comfortable. Parks designed with this ideal in mind offer enough informality and formality to appeal to everyone.

Nature and people can work in harmony together without either having to compromise too much.

Parks provide many benefits for communities. Besides their important environmental services like air and water purification, wind and noise filtering, and sometimes habitat stabilization, these natural areas provide psychological services which significantly impact the well-being and livability of the local community (Chiesura, 130). Parks help to reduce stress, enhance contemplativeness, and provide a sense of peacefulness, tranquility, and rejuvenation for community members (130). Along with the aesthetic, psychological and health benefits that parks can have, another benefit that nature, in this case specifically a park, has is the social aspect (130). Parks encourage the use of outdoor spaces which increases social integration and interaction among members of the community (130).

Obviously in a perfect world, parks and gardens would be the highest priority for all city governments that care about their citizens, but when budgets shrink, park funding gets cut (Muschamp 8). Another limitation for parks is the amount of untouched, publicly owned land where large artistic gestures can be made (8). When the parks movement began, vast areas of land could be used to really create an alternate world from the one people were accustomed to. Generally speaking, Sunset Hill is a large park, but if the definition of a large park that Julia Czerniak and George Hargreaves lay out in their book Large Parks (2002) is used, Sunset Hill only meets half the criteria. They claim that a large park is at least 500 acres but, they are trying to define the ever-changing term, large urban park (Czerniak 35). Although, Sunset Hill is not exactly an urban park, many of the ideas they raise can be translated to fit a more suburban context.

The question now becomes how can the social and physical elements of a park be linked together to create a physical connection for the community. The main way that this project will address the issues of connectivity is through ecological design. In a public park that is the size of Sunset Hill, it is possible to create both successful natural and formal plantings, depending on what feel is desired for the specific place. Public landscapes that are well maintained and have appropriate plants that are human scale, create connections with people and make them feel comfortable to use the space (Miller, 71). According to Miller in his book Parks, Plants, and People, there are few places that are too small or too big that cannot accommodate some kind of landscaping or planting (71).

When looking specifically at the two types of plantings that were identified here, formal and natural, the formal planting are more closely related to what people generally think of as gardens and the natural as types of wildlife habitats. All plantings can be looked at as a form of art for, but this is especially true for gardens. As Miller puts it, creating gardens is like painting with plants (73). Garden designers work with contrast, repetition, line scale, form, texture, and color, which are very much the same tools that painters used to create their compositions (74). With gardens there is a wide range of formality, from haphazard mixtures to perfectly arranged, constructed rows of plants. Two elements that make plant painting so much more complex than actual painting is time and weather (76). Landscapes are unique to almost all other things in the world because they are constantly changing (76). A good planting design

combines all four season to make sure there is a point of interest, and it also comprises all the same elements that hardscapes have, enclosures, openings, and places to sit (80).

However, with times changing towards more sustainable practices, the ideal of gardens is starting to fall out of favor towards more naturalistic plantings. According to Nigel Dunnet and James Hitchmough in the book The Dynamic Landscape, these new landscapes should be relatively inexpensive to maintain, demonstrate seasonal change, support as much wildlife as possible, and be taxonomically diverse (Dunnet, 2). This is different from past landscape ideology that argues that costs are proportional to complexity of planting, rely heavily on exotic species, and organized into culturally informed arrangements (2). With that trend towards naturalistic plantings as the way to combat some of the issues our society faces, comes the opportunity for Sunset Hill to be on the front of the movement. Connecting the park to the surrounding natural systems and restoring a mixture of previous natural conditions that were found on the site pre and post-settlement, will help to put the park on the regional map and meet the communities desire to demonstrate their sustainability.

Another increasing trend within the sustainable, natural landscape movement is the ideal of allowing local place and character to inform the planting design decisions (16). There are a wide range of scales and levels that this idea can be implemented at. The first planting option of habitat restoration is to simply replicate vegetation that is found on the site (16). On the other hand, the planting can begin to incorporate other species into the different patterns and arrangements found around the site (16). Finally, the vegetation used may respond to the local ecological processes that replace the plants that are found on site with ones that fit the ecological conditions better (16). In the end though, the art of restoring natural landscapes requires an initial understanding of the native communities in the region including how the plants propagate and spread in their natural habitats (Morrison, 190). The designer must then be able to simplify and stylize it without losing the aesthetic essence of the complex systems that are found in nature (190). Finally, it must be understood by all parties involved that any habitat restoration will require intelligent management to maintain its aesthetic quality (190).

One of the major challenges of making these naturalistic plantings successful is having adequate space on the site (Dunnett, 132). As James Hitchmough writes in a section of the book The Dynamic Landscape, the most impactful use of naturalistic plantings comes at relatively large scales; blocks of 100 square meters (132). When these plantings are incorporated as intentional and integral parts of the design, they are highly effective and successful, unlike if they are put in as an afterthought for a space that was left over (132). When designing these areas it is important to remember that these landscapes often act as transitional spaces, in which people will want to instinctively experience (132). Because these planting are the link between two other habitats, providing access in-between all of these areas is important to making these spaces successful (133).

Extending the park beyond its physical boundaries is important to bringing people into the site and making the community aware of what the park has to offer. Some of the major potential connections

include an extension of the Dunes Kankakee Trail that could be brought through the site, a local trail system that connects to the new Porter Regional Hospital and PUD (planned urban development) Porter Medical Campus and Senior Living Community just down the street, an indirect connection between the campgrounds at the Indian Dunes as an overflow campground site, and physically connecting natural systems that surround the site and to bring them in. All of these opportunities will be expressed in the design of this project because they have the potential to improve the quality of life of the residents in the community. To go along with improving the overall quality of life, the project will also look more in depth at how ecology and design of the landscapes can not only be used as a tool to extend the parks boundary, but also be used to improve the social, mental, and physical health of the community.

### 1.7.3 : Review of Work Relating to Park Assets, Features, and Activity Areas

When determining whether a park should be expanded or if new features should be introduced, a number of careful considerations must be given to who uses the park. Where the users are coming from, why are they coming, and whether improvements will compete with existing park features are all questions that designers must ask themselves (Fogg 1).

In his book Park Planning Guidelines (1990), George Fogg presents information on some physical features of large-scale parks to address some of these questions. According to Fogg, one of the first steps designers must take when planning park facilities is determining the user demand. In other words, who is coming, when are they coming, and how many will come (1). All of these factors are used to predict the design capacity for the present and the future park (1). He lays out multiple formulas and how to determine what the capacity would be for a few examples. This will be easy to apply to Sunset Hill, since most of this data has already been collected, and just needs to be plugged in and calculated. Another pre-design consideration that Fogg touches on is user data and trends. This includes determining what season has the highest number of visitors, how long the average stay is, number of day and night users, average party size, how people travel to the park, and what they are coming to do (5). Fogg then breaks down this information into typical averages per age group and organizes it into graphs and charts. For example, he believes that the three (3) major uses for a natural-type of park for teenagers is sunbathing, swimming, and biking (5). Now compare that to what he believes the three (3) major uses are for the 65+ age bracket, walking, sightseeing, and fishing (5). It becomes evident that who will be using the park determines what direction the design must go.

By generating a list of typical features found in large parks and analyzing those features independently then it can be determined if that feature is applicable and appropriate to be used at Sunset Hill. Some of the features that most, if not all, parks need to have include some kind of architectural elements whether it be restrooms or shelters, handicap accessibility, interpretive elements, roads and parking, and some kind of administration or service area (17). Another group of more detailed features include elements common in many parks, but could be excluded from a park program depending on the specific setting, such as picnic or

camping area, trails, ponds/lakes, playgrounds, ball fields, beaches, and amphitheaters (Beazley 31). Ultimately, everything must be analyzed through the eyes of the user group to determine if specific features will be successful in this setting. At Sunset Hill the largest user groups are runners, walkers, and dog-walkers.

As far as architectural elements go, most parks have some kind of structural feature. Those structural elements should relate to their function, fit into the topography, show concern for scale, and relate to other existing and proposed buildings (Fogg 17). Because the Porter County Parks Department has expressed interest in adding new architectural elements to the park and the desire for LEED and SITES certifications, these elements will play a crucial role in the park's future appearance and success. Since the site already has structural elements, and the parks department is pushing for more development, it seems appropriate to say this may be the most critical element included in an updated plan for the park in regards to creating character and a sense of place.

Accessibility for disabled users is necessary in today's society and vital when redesigning parks that were created before the Americans with Disability Acts (ADA) because any new features must have equal access. Accessibility addresses more than just people in wheelchairs; it covers a broad range of users and also improves the usability of the park for the elderly people (Fogg 21). When designing for accessibility, it is not ideal to segregate the two kinds of users, so incorporating their needs into components like parking layout, path design, doorways, and restroom facilities helps them feel like the rest of the users (21). Obviously every feature of the park cannot be altered to accommodate accessibility needs, but a conscious effort must be made to integrate their needs into the design of the park.

Picnic areas appeal to every user group, making them features every large park should include. Sunset Hill has three picnic areas already on the site which are relatively well set up. These features will not require much attention, but additional picnic areas could be added. Some human behaviors to remember when laying out a picnic area include people's preference to sit near some shade with a level of privacy, people's desire to sit as close to a water body as possible, and their ability to easily and quickly walk from their car to the picnic area (Fogg 89).Picnic areas also require some other amenities, Most picnic including proximity to restroom facilities, garbage disposal areas, other activity areas, and a water supply. (90). Some kind of shelter, often with grills and tables, invites people to set up under a shady spot if the setting feels right (90).

Fogg lists nine general types of trails: hiking, biking, equestrian, cross-country skiing, water, ATV (all-terrain vehicles), motorcycle, off-road vehicle, and snowmobile (Fogg 31). They can be grouped into two categories: motorized and non-motorized. Motorized trails increase noise, dust, danger, air and water pollution, and habitat destruction. Most users want to enjoy the peaceful natural environment. Therefore, to optimize the use of Sunset Hill, no motorized trails are allowed and only the non-motorized trails will be covered here. Non-motorized trails should be safe, environmentally sensitive passages to provide the public an opportunity to enjoy the outdoor environment (31). Some important things to remember when designing trails include topography, views, road crossings, and the final destination (31). When looking specifically at the

trails, try to avoid "sameness" (32). The trails should be zoned for specific types of uses, and there should be a variety of vegetative covers and changes in grades (32). Longer trails should also offer trailheads. Sunset Hill already has multiple hiking/jogging trails that travel through a variety of ecosystems. Currently, bikes are not allowed into the park, but the talk has come up about the possibility of changing that regulation, especially since they are trying to connect the park to other trails in the area that do allow bikes. Some further development is needed, including better marking and improving the trailheads, which are relatively nonexistent.

In today's society, the major means of access is and will continue to be by personal automobile. Although many share a growing understanding that the trend must change, for now a major item in the design and development of parks is parking and the safe movement of cars through the site (49). Some other auto-related issues that should be addressed include pull-offs/overlooks, entrance points, and service areas/roads (Beazley 73). With some parking and roads already present in Sunset Hill, the need now becomes providing an adequate amount to support an increase in use in the park. This brings about another challenge because increasing the amount of impermeable surfaces for roads and parking lots reduces the environmental quality. Therefore, environmentally sensitive techniques must be applied to increase aesthetic appeal of these auto-oriented spaces, and also to obtain the LEED and SITES certifications.

Water features are a major draw in public parks. A water feature can be a variety of different things, natural or man-made, like a pond, stream, pool, and/or fountain. Elizabeth Beazley covers pools and ponds in her book Designed for Recreation (1969), which has nice detail drawings and major criteria for constructing these features. She believes that because people are undoubtedly drawn towards water, these features should be sited near where people will be, not just where they will enhance the landscape (Beazley 177). Another factor that plays into locating these water features is where water naturally is; low spots that flood after rain means that the soils and vegetation are adapted for these wet conditions (177). Sunset Hill already has three decent ponds, plus some other wet areas. These features should be celebrated. Also, since the site has considerable topographical change, there should be plenty of spots to add more water features if necessary. Another activity often associated with water is swimming, but at Sunset Hill there is no viable reason to include beaches and swimming areas since the Indiana Dunes are so close by.

Every park, especially ones the size of Sunset Hill, need some type of service or administration area, but the size can vary. Sunset Hill already has a maintenance area, but it is not ideally located. According to Fogg, before locating the service area, a few preliminary steps should be taken. Ideally, a study of the park's service needs should be completed with cooperation of the maintenance staff, along with other considerations like all-season road access, amount of storage and work space inside and outside, employee break and parking areas, screening and security, and power and water supply (Fogg 167). Along with the service/maintenance area, some larger, busier parks may require administrative areas. At Sunset Hill, the superintendent of the parks department already lives on site, and the county is also considering moving the department's everyday

operations out to the park. This creates both opportunities and challenges that must be addressed as the park design develops.

Because all successful parks are intended for more than one age group and most age groups have a specific need/interest, especially young people, playgrounds become important when designing a large park like Sunset Hill. A good playground design should appeal to a range of young people from pre-school through elementary school and possibly to teenagers, but the age groups should have some degree of separation (Fogg 85). Each age group has specific requirements and needs. Some design requirements for pre-school playgrounds include being located outside heavy traffic areas but in the vicinity of other activity areas such as picnic shelters, be in partially shaded areas, have benches for adult supervision, and include features like slides and sand for digging (85). For the elementary school age group, some design considerations include location within eyesight of adult activity areas, but not so close to picnic or quiet areas, activities that are more challenging than the pre-school activities, and less seating and height restrictions (86). Finally, some considerations for the teenage age group, if they are chosen to be a desired age group, include separating from family areas and instead locating near areas like a beach or swimming area, including more physical activities like weightlifting and volleyball, with viewing/spectator areas (86). One other feature that is typically included in the category is ball fields of play fields. However, since the Porter County Parks Department has other parks in their system that meet this need and since they have shown no desire to bring them to Sunset Hill, they will not be addressed here. At Sunset Hill, the parks department has expressed interest in updating their playground which no longer meets today's codes, so there is potential to create a design that meets the needs of all three of these age groups. Sunset Hill also has potential for creating a natural playground that gives users a new outlook on what playing outside really means.

Camping meets people's desire to spend time outdoors and "get away from it all" (Fogg 71). The main requirement for a campground is its price and connection to a natural setting (71). Sunset Hill currently offers a primitive campground, but its only frequent users are Boy Scout troops, mainly because the site has no amenities. The area is mainly a cleared area in the forest intended to serve backpack campers. The parks departments' current thought is that the campground could be expanded to accommodate the overflow from the Indiana Dunes. Beazley classifies campgrounds into five main categories: transit, recreational, group, individual, and static, all of which have different design criteria (Beazley 116). Some general characteristics and trends to understand for any campground are that they have peak seasons and days, the vegetation needs a canopy and understory, the location should be on gently rolling topography in the vicinity of restroom facilities and a water supply, and individual campsites should offer fire pits and tables (Fogg 73). Depending on how detailed the project will be, an entire comprehensive project could be made out of a campground design. There is enough information and research out there to go into great detail on a topic like this. Fogg and Beazley do a nice job of highlighting some of the major points, but much more must be learned as the design develops for this feature of the park.

Interpretive features can be used for many different reasons,

but they most commonly explain the historic, natural, and/or cultural values of the park and its surroundings (Fogg 25). Including interpretive features into the park design has many benefits. The presence of interpretive features helps promote education, but also helps promotes responsible use and conservation of the park's resources, giving visitors a sense of appreciation and understanding of the entity they are using (25). Since Sunset Hill is the main facility where the Porter County Parks Department holds its educational experiences, interpretive signs are vital. The theme of education is carried throughout every aspect of the park.

Some additional features/activities of large parks worth considering for Sunset Hill include an amphitheater, fishing, and winter activities. Currently, there is a setup for an amphitheater, but it is just a bandshell at the bottom of a hill. The parks department is interested in further developing this feature to hold 2,000 people, which would make it the largest in the area and could draw some good acts. This brings up many other things like restrooms and parking, that would need to be developed to accommodate this change, but it is certainly a possibility. Recently there has also been some interest shown by community members towards creating some kind of fishing experience. Fogg covers many requirements to consider when creating a fishing area, like access, docks, habitat, and general thoughts about fishermen. The most difficult season to design a park for is winter. The options become limited once the weather gets cold, but some options to consider include sledding, ice skating, and cross-country skiing (131). Winter weather brings special requirements for the park. There are potential issues and benefits that having winter activities brings to a park. There is extra responsibility on the maintenance staff to ensure that the park is safe and accessible (131). Also with outdoor activities taking place in the park it is ideal to provide a place to get warm and get out of the elements (131). The opportunity comes when facilities can be provided that create business for the park. A facility that sells concessions and rents out equipment that can be used during every season and overlap with the function of other features of the park. Currently Sunset Hill does not have much winter interest, except for their winter lights festival. Some of the features listed above could certainly be included into the updated plan to increase participation for the park.

To reinforce Fogg's previous point, Bernie Dahl and Donald Molnar, also point out in their book Anatomy of a Park (2000) that the design must be for the people. Of course, the designer, park board, and park staff will influence how the project develops, but the public, specifically the park users, are the target audience (Dahl 19). Even though most people only use parks occasionally, some are frequent users and some are non-users. Many of those non-users or occasional users may say that the tax dollars that go towards parks should be spent elsewhere, but fortunately those who use the park most frequently will be the most vocal about their desires (19). This public voice will help guide the project, since every development should be tailored to the clients' needs (22). It is important to get the people involved and caring about the project, and one good way to do this is through demand studies, which are typically questionnaires, interviews, and public meetings (22). Clearly, observation alone will not be enough to identify all the desired feature and needs of a select population, which is why it is

so important for park users to get involved in the process. After all, they are the ones the park is being designed for.

According to Dahl and Molner, the site design process is made up of three phases: the survey which assembles the facts and data, the analysis which is making judgments about the effects of choices, and finally the synthesis which combines everything into a comprehensive solution (85). There is constantly feedback between all of these phases, but at the beginning stages of design it is important to have a solid foundation and understanding of whom the park is being designed for. Throughout the latter two-thirds of their book, Dahl and Molner then go through a detailed, step-by-step process of design with multiple examples of projects that employ their process. An example that will be helpful to the Sunset Hill project is their detailed breakdown of the inventory stage of the survey phase. Data that should be collected during this phase include constructed elements like roads and buildings, natural resources like topography and soil types, natural forces like temperature for both macro and micro climates, and perceptual characteristics for things like views and smells (87).

After the knowledge base has been established for both the users and site, the next step can be taken. The designer's job is to develop a memorable experience for park visitors. The basic tools/components that are manipulated and adapted to create parks are lines, forms, texture, and color (35). These components create a sense of place and define the scale and function of a space (41). When designing a park, it is important to remember that the place is experienced using all the senses; therefore when designing a park, desirable attributes should be enhanced and undesirable features should be screened (Fogg 7). Often designers must first test the proposed location to make sure it meets the size requirements for that use (Dahl 48). Then, those proposals must be evaluated to determine if they meet the desired more detailed requirements (48).

When programming specific park spaces, there are two integral concepts to understand. First, a program is an early list of goals/features that direct the designer's thinking, which are subject to modification and are flexible to change as answers arise and thinking progresses (86). The other concept is that every environment is influenced by people in some way, so when determining what features should be included in the program, remember that people will influence its success. Great or small, people play a role in shaping the natural environment, which means that environmentally sensitive design is necessary in today's society. Now more than ever, people are aware of the role we play and how important it is to care for remaining natural environments. By understanding that development is necessary and that development must work with nature, designers can create projects appropriate and sustainable for the setting. Some of the major environmental factors to consider are sewage disposal, stormwater management, and land use/site selection (Fogg 13). Some specific examples of environmentally sensitive features that could be included in this design include things like boardwalks through wet areas, diverse habitats that encourage a wide variety of plant and animal life, permeable pavements, and rain gardens.

The term sustainability is rather broad and ambiguous; it can mean a number of things when applied to parks. As Alexander

Garvin points out in his book Public Parks: The Key to Livable Communities (2011), sustainability is the key to a park's success. He applies six forms of sustainability to parks: social, functional, environmental, financial, political, and aesthetic (Garvin, 198). Garvin grew up in New York, so he writes a lot about Frederick Law Olmsted's Central Park, which is one of the most successful public spaces in the world.

The first example of the six forms of sustainability is the social aspect. A socially sustainable park attracts people of every age, ethnicity, and income (198). In 2003, The New York Times reported that Central Park attracts the most diverse user group from folk dancers, to chess players, to ice skaters. The park attracts so many different people because most destinations are not designed for one specific use; instead, they are designed for a wide variety of activities any time of day and any season of the year (199). Think about a baseball diamond or swimming pool: people come there for that single reason. No one else uses that park, and if those users are not there, the park sits empty. According to Garvin, the key to a socially sustainable park is the landscape itself as the destination. It's a space that has multiple uses that can be defined by the users (199). Think about an open meadow, like the one in Central Park, where people can lie in the sun, picnic, play ball, or jog around the outer edge. The people make the place socially sustainable.

Functional sustainability is very much linked to social sustainability an depends upon people's ability to use an undefined space without conflict (200). Like in Central Park, a functional place can change in minutes, from hosting dance lessons then an informal game of ultimate Frisbee. The other aspect of functionality is circulation. People must be able to circulate around the park safely and easily. This could mean blending automobile traffic with pedestrian traffic, or it could be just one of them alone.

When the word sustainability is mentioned, the most common association is nature and the environment. As Garvin mentions, even though the term environmental sustainability did not exist when Olmsted was creating Central Park, it is sustainable because of the design and understanding that people played a role in shaping the landscape (202). Understanding that people would be trampling over every square inch of the park, Olmsted planned and manipulated the spaces to function like people would use them. With this close attention to detail, he was able to create spaces that allowed small habitats and ecosystems to develop on their own. The park has large enough areas of land, variety of habitats, and different characteristics, like waterways, woods, and meadows, so it can adapt and survive if stressed (205).

One of the more difficult forms of sustainability to measure for a park is financial sustainability. Most parks are run by government agencies or non-profit businesses, which makes it very difficult to measure revenues and expenses like a typical business does (205). The criteria Olmsted used define financial sustainability was based on the tax yield from the properties surrounding the park (205). For example, the difference between what New York City collected as a result of the existence of Central Park and what the city would have collected without it, had to be enough to cover its costs (205). Like most other aspects of sustainability, financial sustainability is realized over long periods of time (206).

Originally, public parks were seen as political assets, but once

they became established, times began to change and other priorities began to replace them on the political agenda (207). Homeowners moving into houses with backyards no longer wanted to pay taxes for park development and maintenance, which consequently led to city governments allocating funds elsewhere (207). Political stability and sustainability became critically important as the parks around the world were rapidly declining (207). When park management is politically sustainable, it receives money and staff and generates sufficient demand for the park to be kept up (208).

According to Garvin, the sixth and final form of sustainability is aesthetic sustainability. He makes a great link between art and landscape. Aesthetic sustainability is central to any work of art, and a park is a living piece of art (208). Daniel Burnham believed that every plan should be "a living thing, asserting itself with ever-growing insistency" (qtd. in Garvin 208). Again Central Park is the best example. Olmsted established an initial plan and character for the park, but over time, it has transformed countless times to become what it is today (208). Like a great work of art, a well-designed park will never lose its appeal. Aesthetic sustainability is not only judged by a park's adaptability, but also by how well the place adapts with the weather, time of day, and season of the year (209). The park should be designed to accommodate different aesthetic experiences to make the most of the changes (209). While all changes may not be acceptable, a flexible design that allows for changes over time is an essential part of aesthetic sustainability (211).

A park designed with an understanding and combination of all these forms of sustainability will be successful, much like those of many great landscape architects. Like Alexander Garvin points out through his entire book, public parks are not finished piece of art; they are evolving products of a living natural landscape which interact with generations of people who use them (211). Besides designing the park to be sustainable and serviceable for years to come, the selection of featured elements also plays a huge role in the amount of success the park will have. Features determine who comes, how often they come, and how long they stay. Along with user demands, diversity is a key when choosing these features. Therefore, Sunset Hill should be successful because it has so much potential with a broad range of options.

## 1.7.4 : Review of Sustainability Guidelines and Other Related Work

Creating sustainable landscapes is more than just creating designs that serve a specific function in a project. In fact sustainable landscapes are dynamic systems of elements working together in harmony. With a shift in the mindset of today's society, green/sustainable is being applied to everything, but the term comes with a level of ambiguity. The end result of this confusion was the creation of organizations and rating systems that award certifications for projects that achieve levels of sustainability. Rating systems are structured criteria that break down aspects of a project so designers can understand what they should accomplish.

The first organization's rating system that will be used to help direct this projects design is the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED). LEED is the broadest, most widely known, and most frequently used certification system in the United States. Although centered

on buildings, LEED does extend partially into the landscape and covers a wide variety of projects. The LEED system is set up so that only exemplary projects are awarded certifications. The USGBC awards silver, gold, and platinum levels of certification based on how many points a project receives. Established in 2000, the point system is based upon six general categories, which are then further subdivided and points are awarded based on those more detailed criteria. The point system was updated in 2009 and can be looked at in more detail on the USGBC's website. Since this project will only be using the criteria as guidelines for design decisions and not figuring out an exact rating that would be received from this development, it will not be covered here. The six main categories used in the rating system are: sustainable sites, water efficiency, energy & atmosphere, materials & resources, indoor environmental quality, and innovation (Rider 21). Most of these categories are set up to rate buildings, but one major category focuses on the landscape: sustainable sites. This proposal for Sunset Hill will focus on obtaining points from this specific category.

The sustainable sites category addresses what goes on outside of the building and how unintended environmental impacts will be mediated. Within that broad category, designs can earn points in several subcategories, including site selection, development density and community connectivity, brownfield redevelopment, various aspects of alternative transportation, various elements of site development, stormwater design, heat island effect, and light pollution reduction (29). Right away certain categories can be identified for their potential to help earn points. This project will address all of these subcategories except for brownfield redevelopment, heat island effect, and some of the density and alternative transportation criteria. Obviously reclaiming a brownfield site would be ideal, but since none have been identified on the site, the site selection points will have to come from choosing locations that have the least amount of impact on natural systems.

Since the park is located in a semi-rural setting, a high-density development would not be appropriate, but the option to create connections to other surrounding communities is certainly possible. This can be achieved through natural or man-made elements like trails, which leads the project into the category of alternative transportation. By creating some of those connections to the surrounding areas, the project will be connecting to other local bikeways or pedestrian networks. One goal of the project is to create a destination for local residents plus users from other regions, which means walkability and physical connections to surrounding neighborhoods are critical.

Maybe the most important element and the one that will be explored in the most detail in this project are the credits dealing with ecosystem disturbance. These points can come from multiple categories like site development and stormwater design. Often new construction first requires the destruction and displacement of natural systems, so this project has identified a number of major topics to address and accomplish. These ideas include using solely native plants to encourage ecosystem development, and reducing and managing stormwater to limit effects of the development on the surrounding community (31). There are other ideas that have been laid out to also improve the sustainability of the site, but these two ideas will be the focus in the design of Sunset Hill.

Porter County Parks has already taken the first step, to receive the LEED certification by registering the project with the USGBC. This step shows that the parks department and community members are serious about making site improvements and adding new features to improve the function and relevance of their park. The second organization's rating system that will be used to guide the development of the park is SITES.

The Sustainable Sites Initiative is a partnership between the American Society of Landscape Architects, Lady Bird Johnson Wildflower Center, United States Botanic Garden, and an additional group of diverse stakeholders which set out to establish and encourage sustainable practices in landscape design, construction, operations, and maintenance. The initiative is modeled after the LEED rating system. SITES is dedicated to transforming the development of land so that ecosystem services are brought to the front. The central message is that any landscape, large or small, holds the potential to improve and regenerate the natural benefits and services provided by ecosystems.

There are nine sections where credits can be earned. They are organized to help guide a designer through the design process. The nine categories are site selection, pre-design assessment and planning, site design (water, soil and vegetation, materials selection, human health and well-being), construction, operations and maintenance, and monitoring and innovation. The site selection has to do with selecting locations that preserve existing resources and repair damaged systems. Pre-design assessment and planning simply means planning for sustainability from the beginning of the project. The site design categories refer to protecting and restoring the processes and systems associated with water, soil, and vegetation. It also means that the materials chosen will recycle existing materials or be the result of sustainable production practices. And finally, they help to build strong communities and sense of stewardship. The construction section aims to minimize effects of construction-related activities, whereas the operations and maintenance section aims to maintain the site for long-term sustainability. Finally, the monitoring and innovation category is set up to reward exceptional performance and improving the knowledge on long-term sustainability.

Unlike the LEED rating system, SITES is aimed directly at the landscape, not the building. This means that all of these nine categories can be applied to this project, unlike the LEED system where only one or two categories could be applied at Sunset Hill. Although all nine categories of the SITES guidelines will help direct the design of this project, the major focus will be on two of the site design categories that deal with water, soil, and vegetation. These sections are most closely related to ecological design which is a large part of the design for this park. Within these two categories there are eight separate areas to earn credit in the water section, and thirteen areas in the soil and vegetation section. Some of these areas that will be addressed in this project include designing stormwater features as landscape amenities, protecting and enhancing on-site water resources, restoring and preserving plant communities native to the ecoregion, and using appropriate, non-invasive plants.

The documents that have been set up for this initiative are user friendly and easy to follow so that the designer can easily follow the process to create more sustainable designs. Each section of

the guidelines and performance benchmarks document is broken down further to identify the requirements for earning these credits, some suggestions on how to earn them, how to document these techniques for submittal, and additional resources. The second is the case for sustainable landscapes document which addresses the purpose and principles of the initiative, the economics of sustainable landscapes, what ecosystem services are, and then gives some examples of case studies that demonstrate these sustainable practices. The second document is really a convincing, well-written document that clearly represents the benefit and importance of designing sustainably. After reading through these documents, it becomes evident that the SITES initiative should become a part of all projects in the field of landscape architecture.

The final step and challenge for the parks department is selling these techniques to the community. Sure the community wants the reputation of being healthy and sustainable, but when it comes down to cost and breaking away from the normal type of park development, it can be a hard sell. To receive the points towards these certifications, many of the steps and features that will need to be taken and added to the park will need to be sold to the community. All of these guidelines from the LEED and SITES certifications will direct the design, but the one of the main issue that this project will look at in more detail is the category of ecosystem disturbance, specifically native planting and restoration. The main challenge when it comes to convincing the public about planting is that most people think that plants are plants, and they are all good. People are familiar with only a small range of plants, ones that overused in landscapes and sometimes not even beneficial. The final thing that is a challenge to convince people of is choosing native plantings over the typical exotic landscapes they are used to. Some people do not like the aesthetic look of native plantings. They are seen as weedy and unorganized, which means that the main challenge becomes creating visually aesthetic native plantings (Dunnett, 6).

The book The Dynamic Landscape really does a nice job at covering many different aspects of native plantings in a fair amount of detail, with different opinions from multiple authors, but the sections by Noel Kingsbury and Daniel Morrison best cover actually creating visually aesthetic native designs. According to Kingsbury, in order for these landscapes to be accepted and successful, they must be desirable, which has varying degrees depending upon the public's view of what nature is (Dunnett, 63). The solution is challenging because ecological designs are complex systems that deal with the relationship between people and the land, and the demand for these landscapes to accommodate people's need for order, meaning, and beauty (63). The resulting native plantings will have to be meaningful and visually pleasing elements, which Kingsbury classifies into three main ways that it can be done. First, the plant communities selected will have to be chosen based upon their visual appeal to the public, and then adapting the environment to suit them (63). The second method is using different kinds of plant communities as large scale sculptural elements (63). And finally, the designer can alter the typical species makeup so that more aesthetically appealing plant communities can be created (64). In the case of Sunset Hill different methods will be applied depending on the situation. In smaller, more accessible landscape the third method of altering species will be used, but in

larger settings with a more natural intent, a variation of the first two methods will be implemented to create communities that are more likely to occur in nature. Working multiple techniques and types of plantings into the site at various locations helps to ensure that it holds it validity. If people see the same thing over and over they tend to overlook its value, whereas if it is a landscape that they do not often experience, they will better understand that it is unique and important, which makes it more enticing to experience (64).

In the section written by Darrel Morrison, the topic of ecological planting design and planning is also discussed. He believes that the native landscapes are both visually and botanically diverse, but he also understands that designers cannot replicate the pre-settlement state that these landscapes used to exist in (115). There are also three methods that he believes ecological landscapes can be developed in. The first being substitution of traditional exotic species for native species (118). This method implies that traditional methods of forming spaces with plants is still used except when the species of plants are chosen; the designer selects native plants that replace traditional exotic plants that are chose solely for aesthetics, not function and aesthetics (118). The second approach is using a diversification of ground layer plantings (119). This approach means that the designer moves away from a single species ground cover planting to a diversity of species that meet different characteristics in the soil, light, and moisture (119). The final approach is abstracting and stylizing native plant communities (121). This approach is exactly what it sounds like, the designer groups plants together based on the botanical and aesthetic composition of naturally occurring communities, and the abstracting them to make simpler compositions in smaller areas (121). All three methods make sense to be applied in the case of Sunset Hill, even more so than Kingsbury's methods. Morrison's methods go from a range of how conservative the design intent is, which makes it easy to select a method. Again, at Sunset Hill a mixture of all three methods would be applied depending on the location of the planting. All these methods are viable, it comes down to the designer and what statement and response they are trying to evoke from the public.

Although the LEED rating system is the most widely known and used system in the world, the SITES rating system is by far more applicable to the field of landscape architecture. The SITES initiative is set up to make designers create more sustainable projects. Every section is designed for landscape architectures, which makes it extremely helpful when creating a design for Sunset Hill. Because both the SITES and the LEED guidelines will be used to help guide the development of this park design, ecosystem creation will be the main focus of the design. Ecosystem and ecological design are addressed in both rating systems which will help to provide points towards both certifications. Sustainability is the future to the field of landscape architecture and successful landscape designs.

# Section Two :
# The Project and its Setting

# 2.1 : Project Goals and Objectives

- Goal : Create an up-to-date park design that has character and a sense of place which demonstrates a thorough understanding of the rich local history of Sunset Hill.
  Objective 1 : Conduct interviews and surveys of design professionals, local residents, and park users to gather sufficient data to make the appropriate design decisions to create that historical character.
  Objective 2 : Implement the use of new modern technology and ideas, but apply them in a way that some are disguised and others are used as educational tools.

- Goal : Integrate nature/ecology, recreation, and food production into a single system in order to improve the quality of life for the residents of Porter County and fulfill their desire to be viewed as a healthy, sustainable, growing community.
  Objective 1 : Create a plan that incorporates design features that help to improves air quality and water quality around the site.
  Objective 2 : Design the park for all five facets of sustainability:aesthetic, social, functional, environmental, financial, and political to be able to effectively market the park as part of a sustainable community.

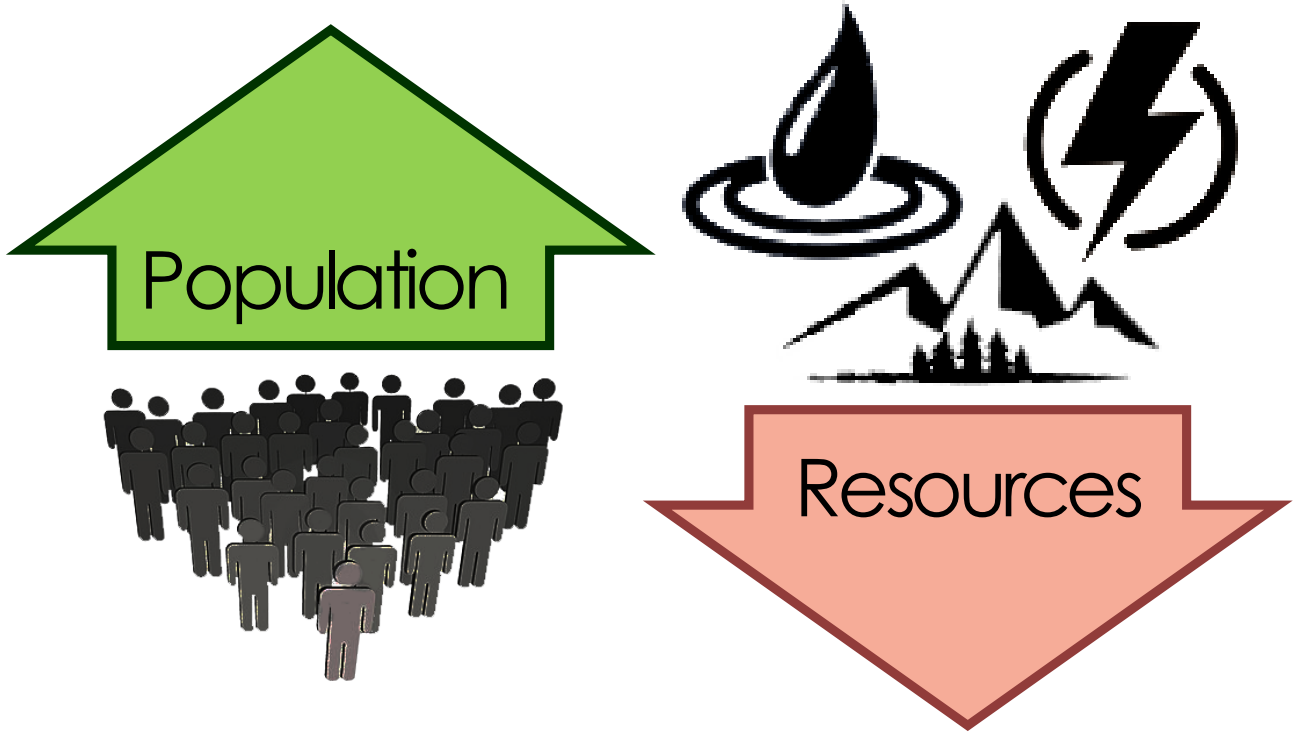
- Goal : Produce a variety of organic food using various production methods in order to educate the community and create food to be distributed to local restaurants or sold at a market to become part of the local sustainable food system that emphasizes the importance of healthy sustainable food.

- Goal : Create recreational activities and experiences not readily available to the community by preserving/improving existing park activity areas and introducing new features to the park in order to increase the overall function, quality, and park users to make it a regional destination.
  Objective 1 : Build off of existing features like the trail system, campground, and amphitheater.
  Objective 2 : Identify elements of the park that are missing like community/visitor information center, restrooms, and a concession area that will help to create and establish the park as a regional destination.

- Goal : Improve the quality of the diverse types of habitats throughout the site and establish connections beyond the parks boundaries to provide healthy habitats that allow a wide range of wildlife to live on the site and serve as an educational base for the community.
  Objective 1 : Restore wildlife habitats using native vegetation and planting techniques to continue the environmental network that runs throughout the region.
  Objective 2 : Include stormwater management structures to contribute to or limit the impact the park development has on the aquatic network of the area.

# 2.2 : Summary of the Issue

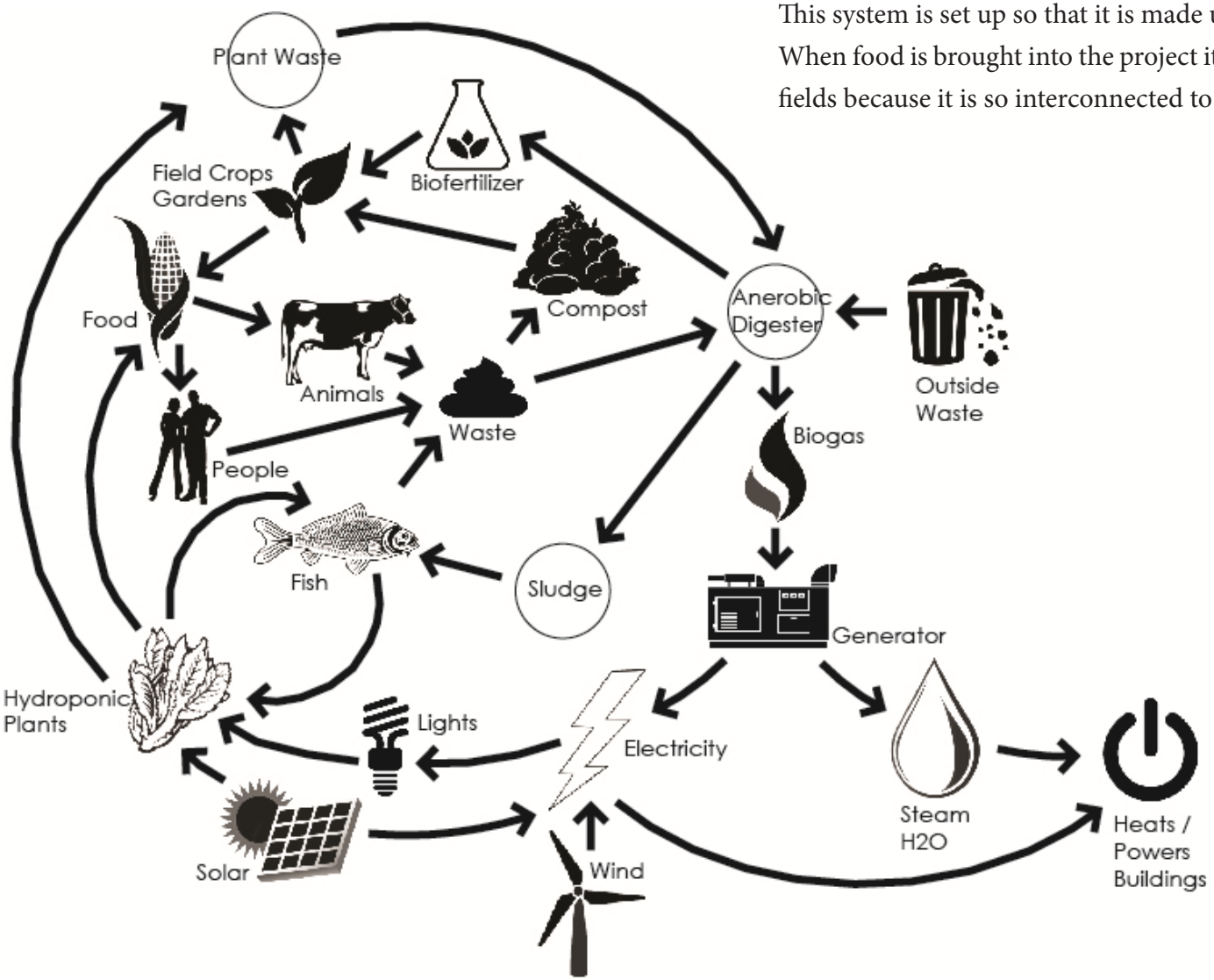
**Sustainability**: practice of balancing the use of natural resources for human needs and desires in order to avoid depleting the supporting structure of human life, nature's ecological systems, so that all parties involved ensure longer, healthier lives for the future generations.




How Do We Sustain a Larger Population with Fewer Resources?

# 2.3 : Sustainable Systems

By creating a nearly closed-loop system within the park is able to respect the main issue in our society today, sustainability. By incorporating all by-products of one system into the inputs of another system there is a greater environmental and economic benefit. Many of these systems have been studied tested with more of an academic approach. It would be ideal to take all of this research and create a full scale, system that could be monitored and used as a precedent for other projects to us as an example of a large, full-scale version that actually works in physical form, not just theory. This system is set up so that it is made up of other smaller systems. When food is brought into the project it opens doors to many other fields because it is so interconnected to other sustainable systems.



# 2.4 : Site Considerations and Concerns

## Considerations

### Natural Systems

Since this project is a large public park design, it is entirely focused on the outdoors and the natural systems that exist there. The natural systems on the site will be the most influential aspect of this design. Not only will the natural systems in the park drive where and what kind of development can happen, it will be a major focus of design. Habit restoration/creation is one of the major areas that will be designed here for both a prairie and a wetland habitat. Another driving factor in the design is that as little disturbance to the existing natural systems is desired. Some of these areas will need to be maintained and accessible for the trail network, but heavy development is not desired there. Also, to receive the certifications for sustainable design, the project must successfully address all aspects of the design that impact the natural systems.

### Transportation

Currently, the only way to get to Sunset Hill is by automobile, so until another mode of transportation is established as a viable way of getting to the site, transportation will continue to play a major role in the development of the park. Currently there are three entrances to the park, one from the south that dead-ends in the campground, and two from the west that dead-end in central activity zone where the original farmstead was. With these three entrances there is a limited number of parking spots, likely less than 100 total, which provides another issue that must be addressed with the topic of transportation. When the park is upgraded to a regional destination, there must be an adequate number of parking spats and access to accommodate the increase in users. The site is limited entry wise from the east because it is blocked by all the wooded, natural areas. However, on the north side of the park of Route 6, which is by far the busiest road touching the site, there is no entrance. This poses a great opportunity to draw people into the park there.

### History

A large part of the research for this project was spent on understanding the role that history and culture play in shaping the landscape. With the rich history of this site it will be a major factor in the development of the park. Obviously the park no longer functions as a farm, but the aesthetic quality of a farmstead is evident in nearly all the structures. Some features may be reintroduced or be revamped to bring back some of the farm activities, but for the most part the history of the park will shape the character of new features that are added to the site.

### Land Use

Breaking the space down into related land uses is one of the first things that will be done when designing the park. As it stand right now, development just happen whenever and wherever, so to bring come continuity to the development activates that are related will be grouped together. There will be an active zone, with sub-categories within it, passive, natural area with sub-categories, campground, and a service area. Creating the sub-categories within the individual zones will be key when trying to create specific activates that function successfully

# Concerns

## Client

Not only are the residents of Porter County the clients in this project, the Porter County Parks Department is the client for this project as well. Being able to satisfy all their needs and meet the requirements that are needed for this comprehensive project will be a difficult task. The plan is to propose a solution which meets the community and the parks department's realistic needs, and then an alternative proposal that demonstrates what Sunset Hill could be. Because this will be nearly twice the amount of work, I feel time will become an issue. It could turn out where both projects do not live up to their full potential. The last issue that relates to the clients is their location. Since the people that will be influential in this project are over three hours away, distance becomes an issue in regards to the number of times that personal interaction can be had with them.

## Natural Systems

The natural systems of the park will be the largest, most influential contributor to the design of this park; however, they are also a major concern when it comes to creating designs for the park. Because natural systems are such delicate structures, it is hard to design systems and make them successful. It is also a challenge to have large native planting put in a project because of opposition from the community.

## Time

With only one semester to complete this entire project time is definitely an concern. With all the things that need to be accomplished here, and all the meetings that need to be setup and held, the actual amount of time to thoroughly go through a project this size by oneself, is a challenge. To get the product that is desired there will be many things that come up in the process that will eat extra time up, so there is no doubt that when the end of the semester comes around it will not have been enough time.

## Cost

With the fact that this is a real project that could have real impacts for the residents of Porter County, the cost of this development does have some weight when decisions are being made. Sure, this project is not a construction document package and bids are not being sent out to contractors for this, but for it to show local community members the real possibilities of the park, it has to be somewhat realistic. Along similar lines, since cost is going to play a role in some design decisions, a rough estimate for the project should be made. This could cause some issues since this is something that I have not done before, which is a little worrisome. Fortunately, Porter County Park's park planner, Ray Joseph, said that he would assist me with this task, since he has experience doing it.

# 2.5 : Client and Users

## Client

Sunset Hill Farm and Park is being designed for Porter County's Department of Parks and Recreation. The Park Planner, Ray Joseph is the direct contact person for this project. Ultimately any design decisions that are carried out go through him and then the park superintendent, then the park board, and then the commissioners. They act as the client for this project, but the users, the general public are also the clients for this project. Because this is public land the project is ultimately being designed for the people who use it. There will be a series of meetings held before any decisions are made and carried out. Some aspects of the project, specifically the food production aspect of the project are not the park departments main goals, but as this project is also serving as a creative project for Ball State University, additional pieces have been added to meet the project demands. In a way this makes the university park client for the project, as more innovative, idealistic pieces are designed.

## Users

As mentioned before, the general public is the main user of the park. As the park is set up now the main users come from the direct area surrounding the park. People of Porter County, specifically people from the immediate surrounding cities like Valparaiso and Chesterton. When the park becomes more developed, the park's target user group will be expanded to make it a regional destination. The hope is that there is enough going on in the park that people will come from across the boarders of the surrounding states like Illinois and Michigan. A large amount of the users today are walkers and runners. They are a critical role player in the park so their presence will continued to be valued as the park develops, but other groups of people will hopefully be introduced to the park as new features are developed. The other aspect of the project is that the people who already use the park can be exposed to something new that they may not have been coming directly there for.

# 2.6 : Program

The entire park revolves around three (3) main types of activities. These systems are already partially developed on the site. The project will revolve around adapting and improving the funtion of each of these spaces. New elements will be introduced into each zone. As the park has developed ofver the past years, there has not been any thought that has went into it. Things just appear in random places that do not relate to the other activities going on around it. The park will be restructured in a way that makes the space work as one entity. This appeals to the physical development and the structural organization so that future developmetns can be built out and work seemlessly into the existing fabric. Besides the three general categories of activities, other nesscary park features will be include so that the park can funtion on its most basic level.

## 3 Zones/Types of Activities

1. Agriculture/ Food Production
2. Recreation /Entertainment
3. Nature/Ecology

Plus additional necessary features
(parking, roads, and maintenance area)

# Nature/Ecology

Planting Lists

- Prairie
- Savannah (transition space)
- Woodland
- Wetland
- Ponds
- Streams/Creeks
- Stormwater/LID Features

- Education/Demonstration Area

# Agriculture/Food Production

FOOD PRODUCING

- Aquaponics System
- Hydroponics
- Starter Greenhouses

→ INDOORS → PRODUCE: HERBS & VEGETABLES

- Field Crops/Inter-cropping → PRODUCE: GRAINS (CORN, WHEAT, SOY & SORGHUM)
- Community Garden → PRODUCE: HERBS & VEGETABLES
- Orchard → PRODUCE: FRUIT
- Market
- Education/Demonstrataion
- Service/Research Area

# Recreation/Entertainment

- Trails (jogging & biking) → Trailheads
- Campground
  - Washroom Facility
  - Shelter/Picnic/Fire Pits
- Ampitheatre
  - Restrooms
  - Concessions
- Playground
- Fishing
- Picnicing → Shelters
- Education/Program Area
- Open Space

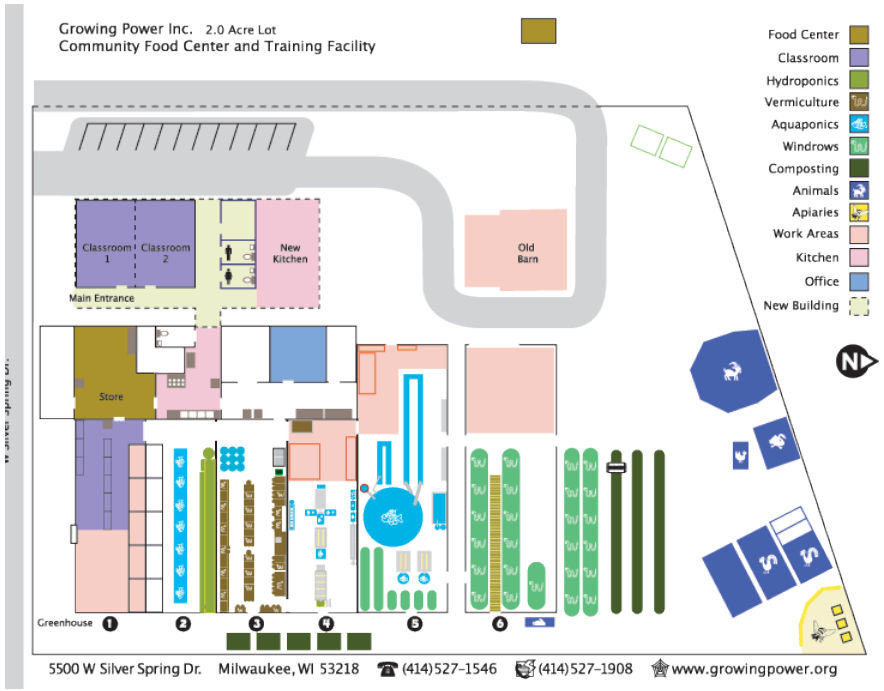
# 2.7 : Case Studies

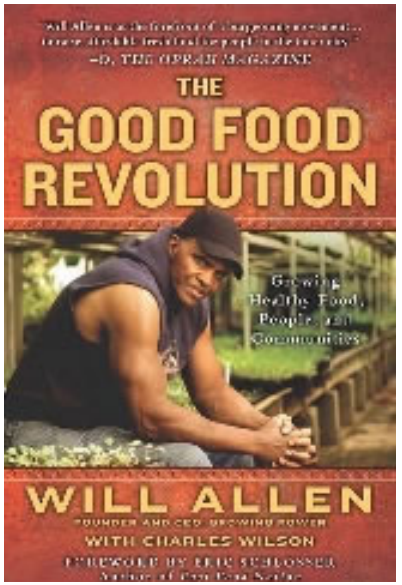
## Case Study 1 : Growing Power, Milwaukee, WI

Community Food Center where people can learn sustainable practices to grow, process, market, and distribute food. Two-acre farm provides a space for hands-on activities, large-scale demonstration projects, and for growing a myriad of plants, vegetables, and herbs. In a space no larger than a small supermarket there are some 20,000 plants and vegetables, thousands of fish, and a livestock inventory of chickens, goats, ducks, rabbits, and bees.

The urban farm currently includes:

- 6 traditional greenhouses growing over 15,000 pots of herbs, greens, seedlings, and sprouts
- 2 aquaponic houses growing Tilapia and Perch with beds of additional salad mix and seedlings
- 7 hoop houses growing salad greens and mushrooms
- a worm houses with over 50 bins of red wriggler worms
- an apiary with 14 beehives
- 3 poultry hoop houses with laying hens and ducks
- outdoor pens for livestock including goats and turkeys
- plot of land for first stage of the composting operation, includes 30 pallet compost systems
- anerobic digester to reuse food waste
- a rain water catchment system
- a retail store that sells produce, meat, worm castings, and compost to the community



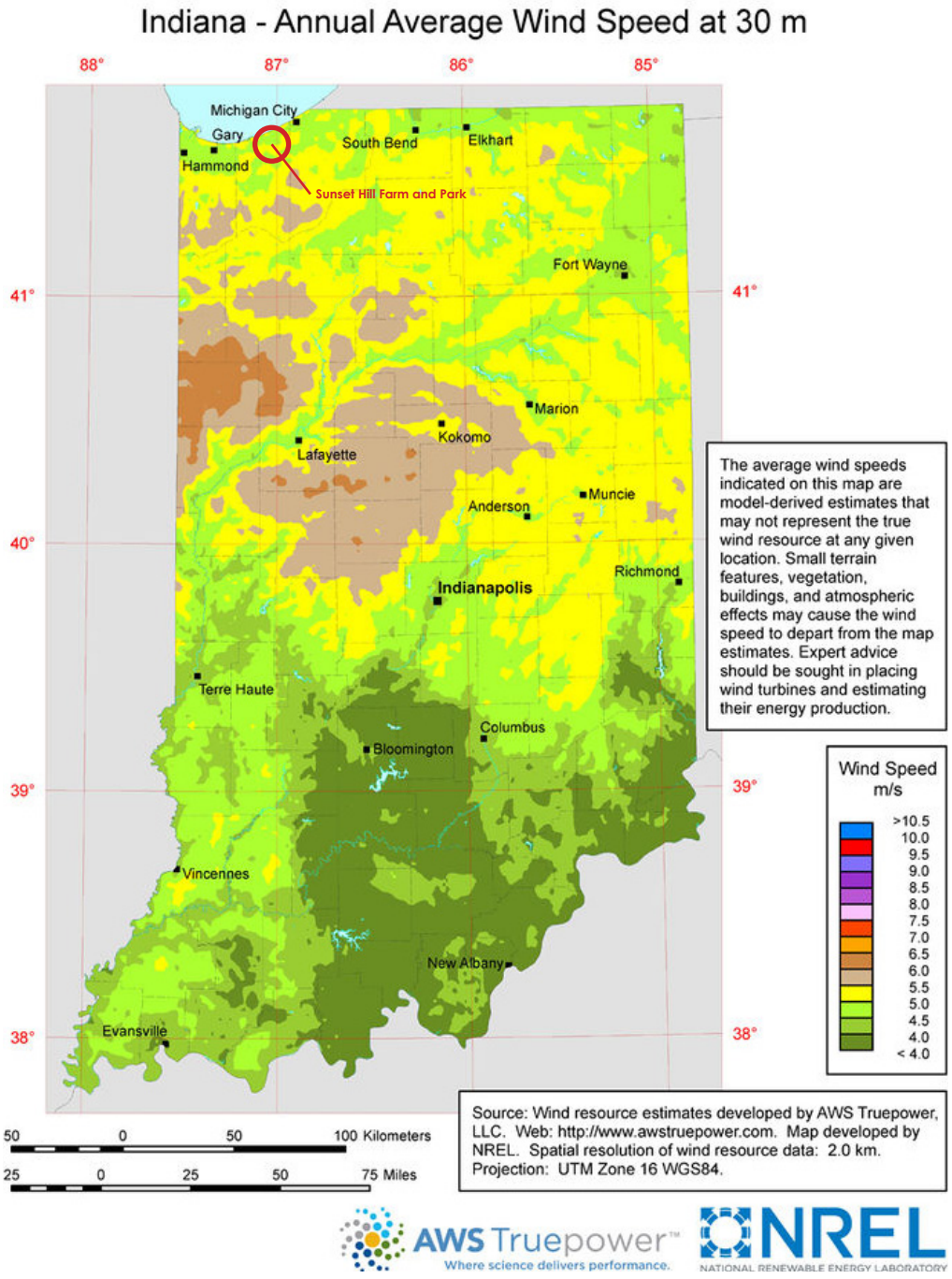
## Case Study 2 : Indy Urban Acres, Indianapolis, IN

The 8 acre organic farm supplies low-income families on the Eastside of Indianapolis with healthy fruits and vegetables and serves as an educational resource for community organizations and Indy Parks to teach the value of the urban gardens. The Indianapolis Parks Foundation received a $150,000 grant from Indiana University Health to start up the farm to help fight obesity, diabetes and hunger, all are issues among lower-income families without access to nutritious foods.

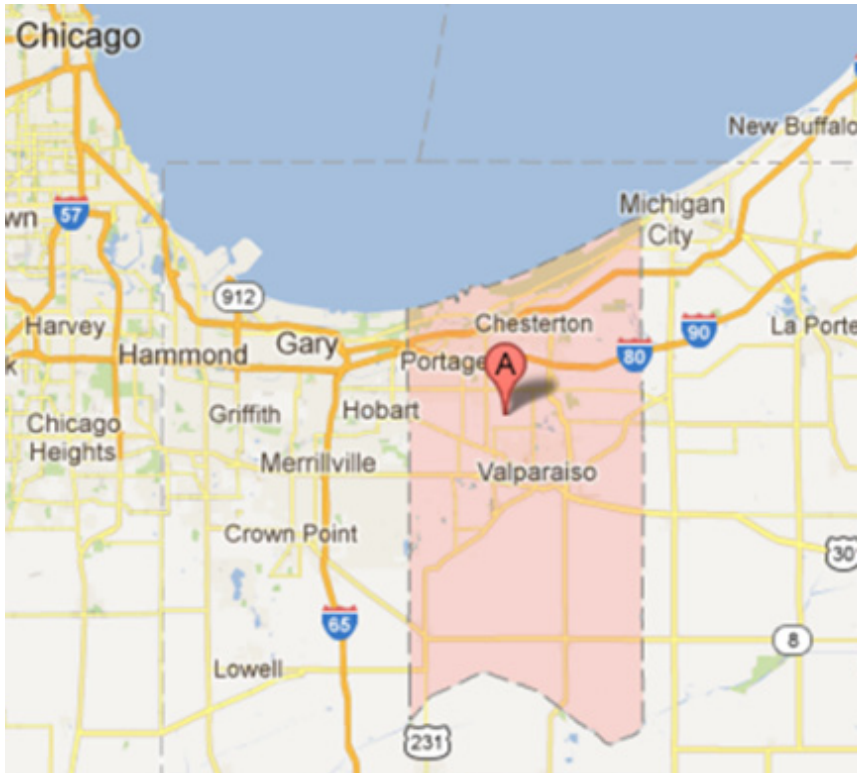
# Section Three :
# Design Process

# 3.1 : Park Location

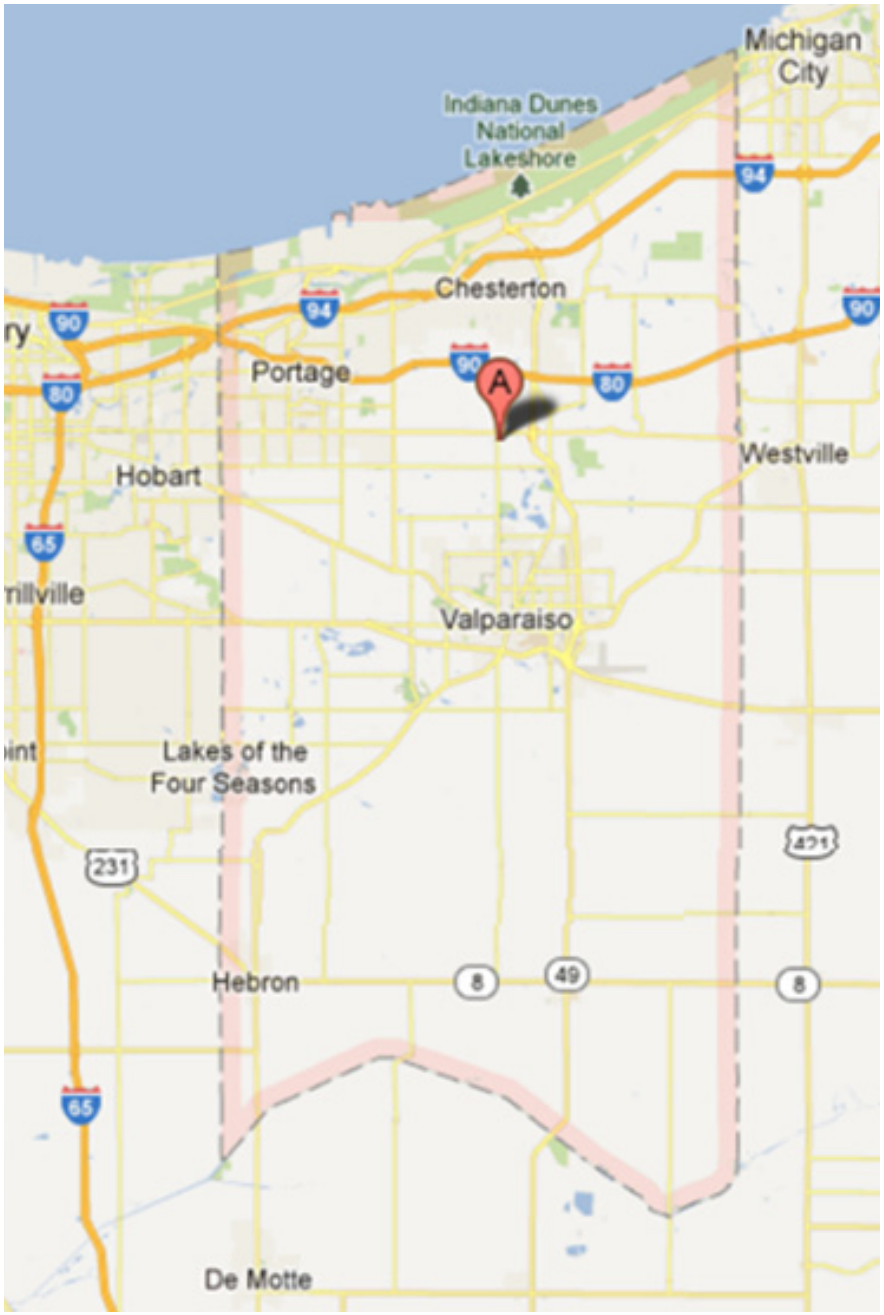
Sunset Hill Farm and Park is located in Northwest Indiana, just south of the tip of Lake Michigan. Being situated within the Midwest the parks future development can take advantage of some of the natural elements. Wind being a source of power generation is feasible for the area. Although the park is not located in the two hot spots of the state, as demonstrated by the figure to the right, the park still has a high enough average wind speed to justify taking advantage of wind power. The park is in a setting with a large amount of people within close proximity. As illustrated in the images on the following page, people from multiple states are within visiting distance. The city of Chicago is only and hour to an hour and a half away. This particular part of Indiana has a relatively high population. It is situated in a very unique and diverse part of the country that draws people from around the country. Sunset Hill is located within Porter County in Liberty Township. The park has a Valparaiso address, but lies in an unicorporated area of the county.




Midwest Regional Map: relationship to major cities in the Midwest




Northwest Indiana: Porter County in relationship to the region

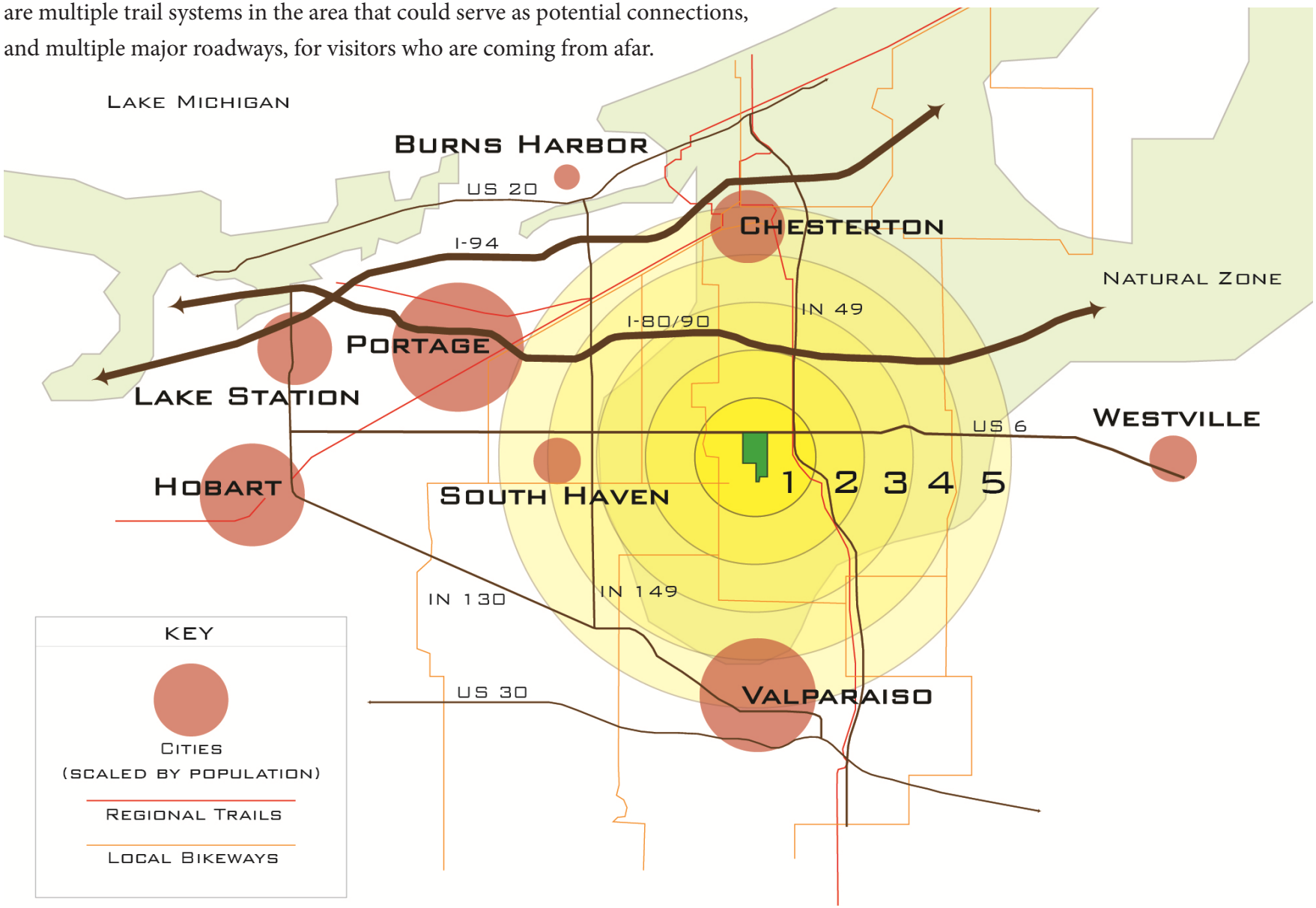



Porter County: Sunset Hill in relationship to the rest of the county

# 3.2 Park Context

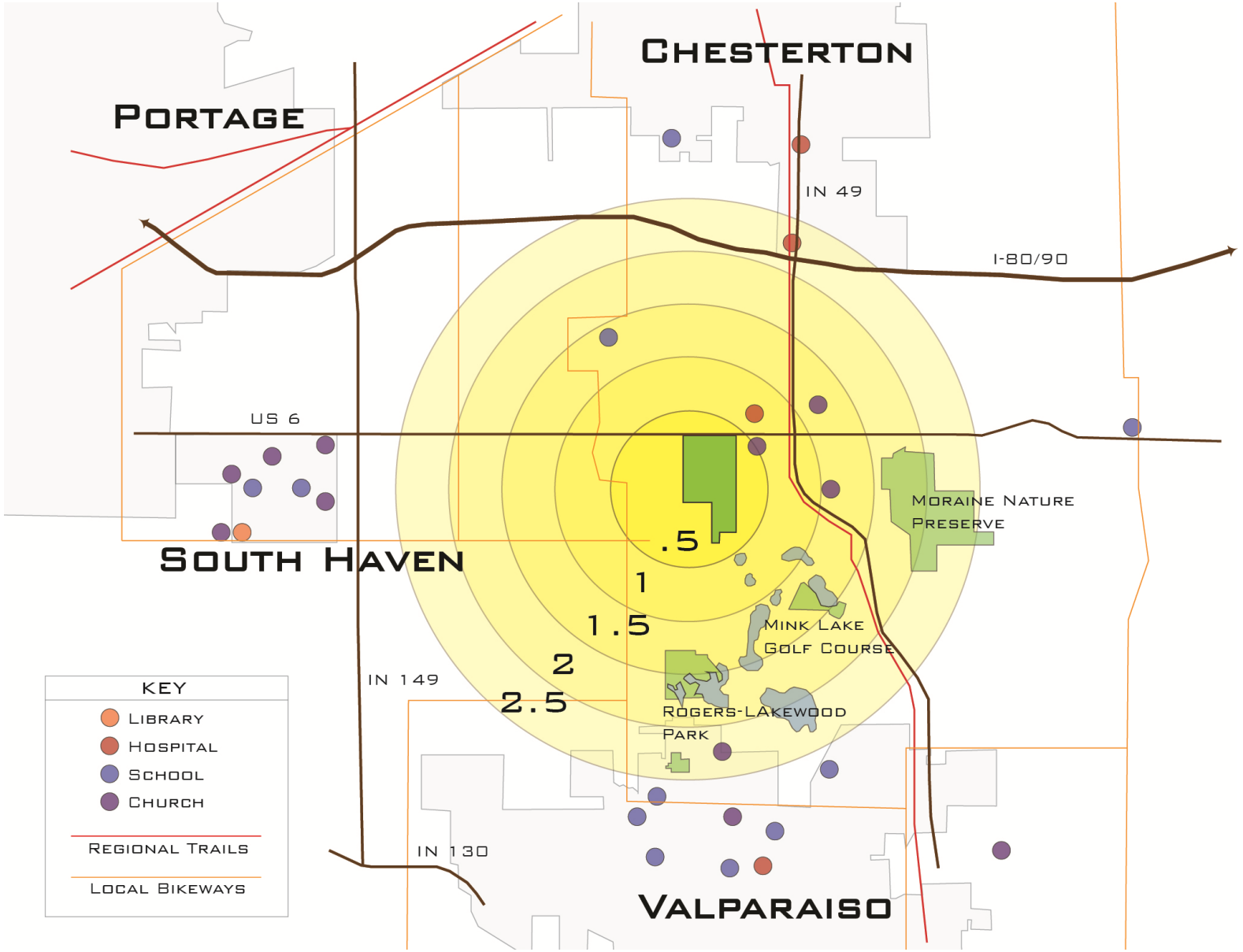
## Regional Context Map (1 Mile)

Sunset Hill is located between three large urban centers of Northwest Indiana, Portage, Valparaiso, and Chesterton. The park is located within Porter County in Liberty Township. As depicted in the image below the park is within 5 miles of the populated urban areas. There are multiple trail systems in the area that could serve as potential connections, and multiple major roadways, for visitors who are coming from afar.



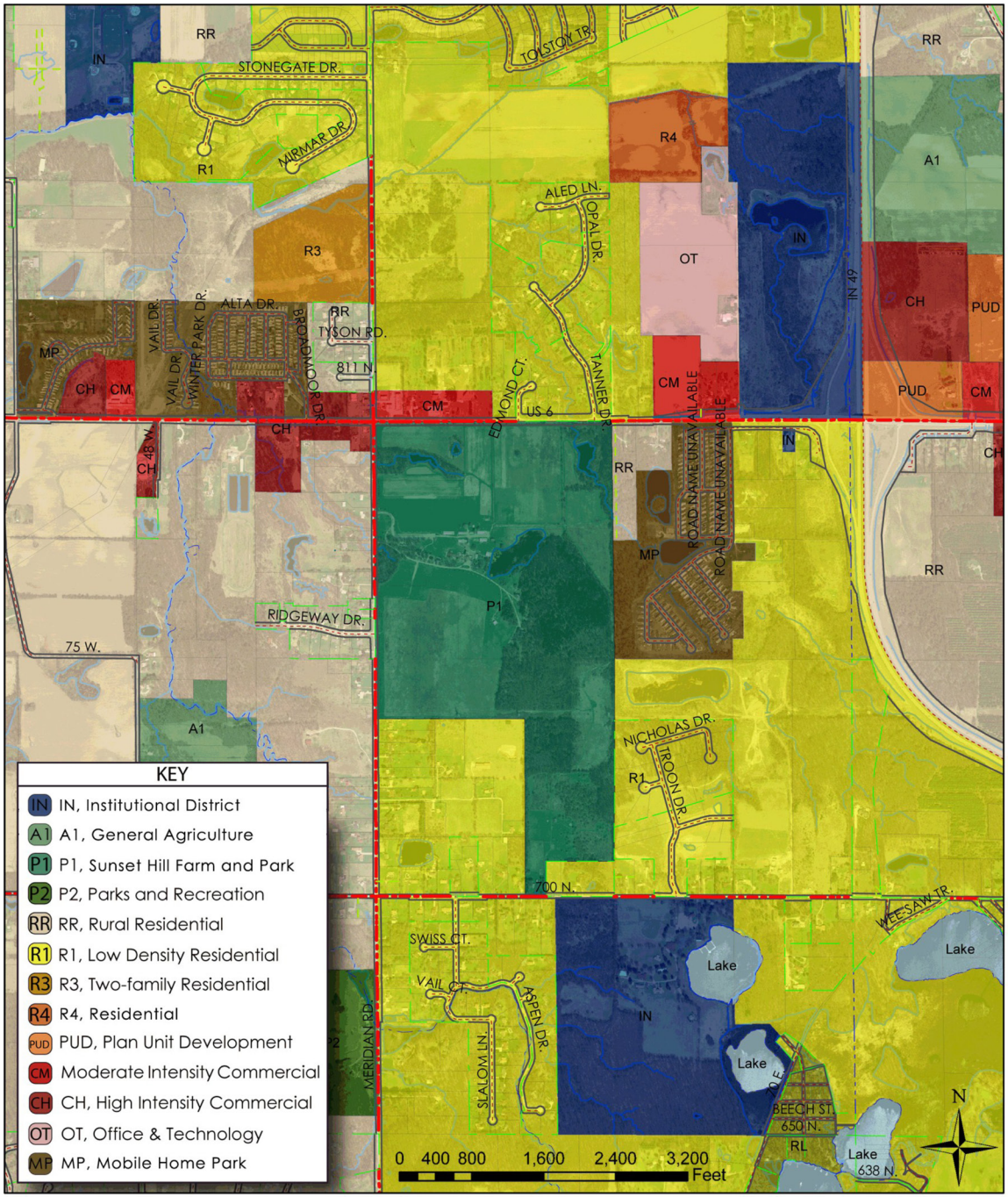
## Surrounding Communities (1/2 Mile)

As the park is located within a more rural, natural area of the region there are other features of the area that could become part of a larger network of outdoor spaces. As shown below, there are also various public entities that could also play a role in future development.



## Local Zoning Map

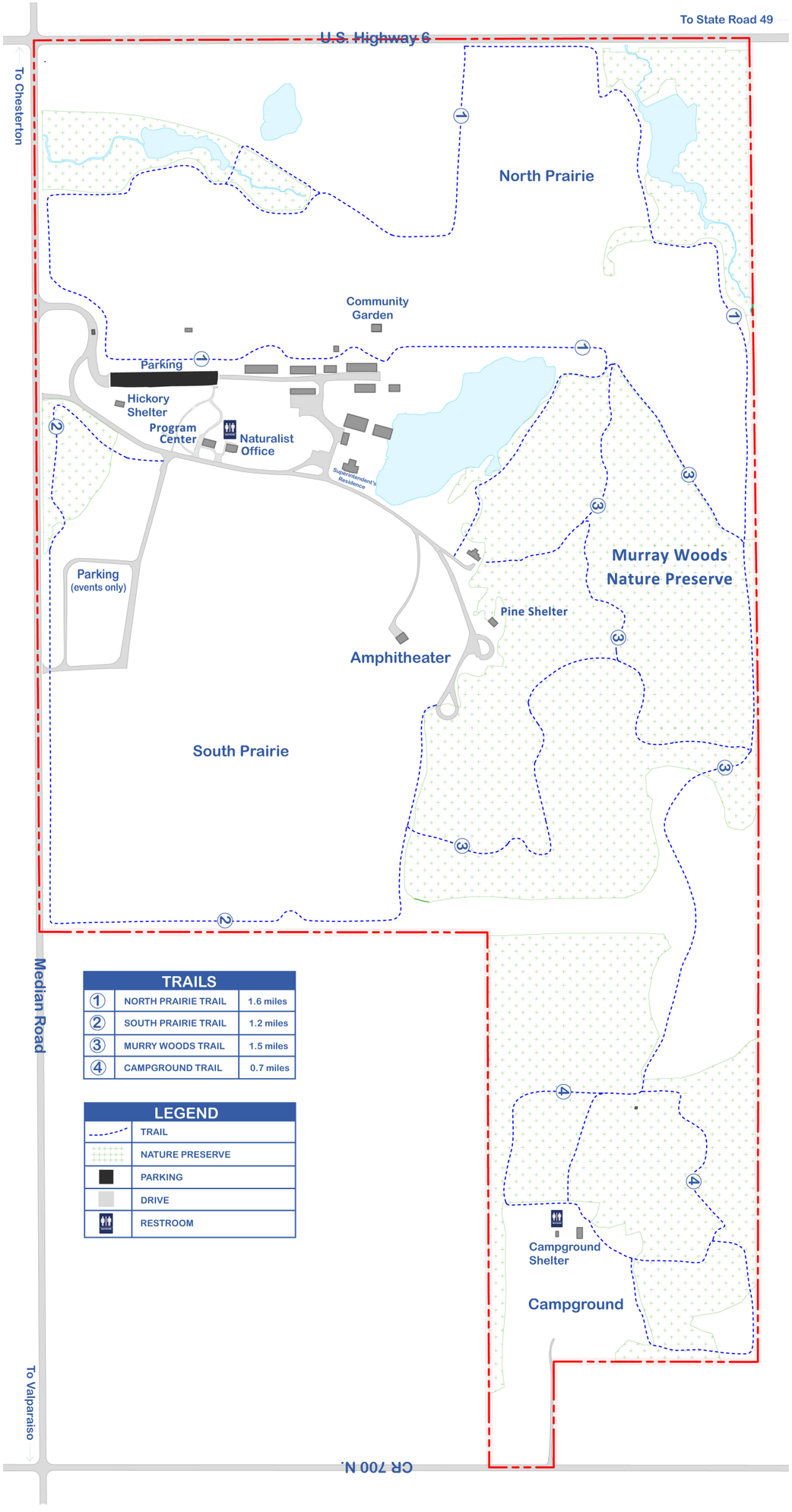
Immediately surrounding the park, as shown in the figure to the right, there is a vast majority of land devoted to low-density and rural residences. The most active spaces are located along the Route 6 corridor on the north edge of the site. This area provides the most potential access and connections to draw people into the site. This area of the sites allows for some commercial aspects of the design to be introduced. As the area surrounding the park at a more zoomed out scale has a mix of ecological areas and farmland the park can take advantage of these different types of lifestyles to draw people into the park. Just south of the park are other recreational areas that can be tied into the park along with a proposed extension of the Kankakee-Dunes trail which will be brought right past the site. It connects the entire county together. Just to the northeast of the site, the multi-million dollar Porter Hospital was just constructed. With it there is a senior living center and mixed use development going in that can also be linked up with the development of the park.



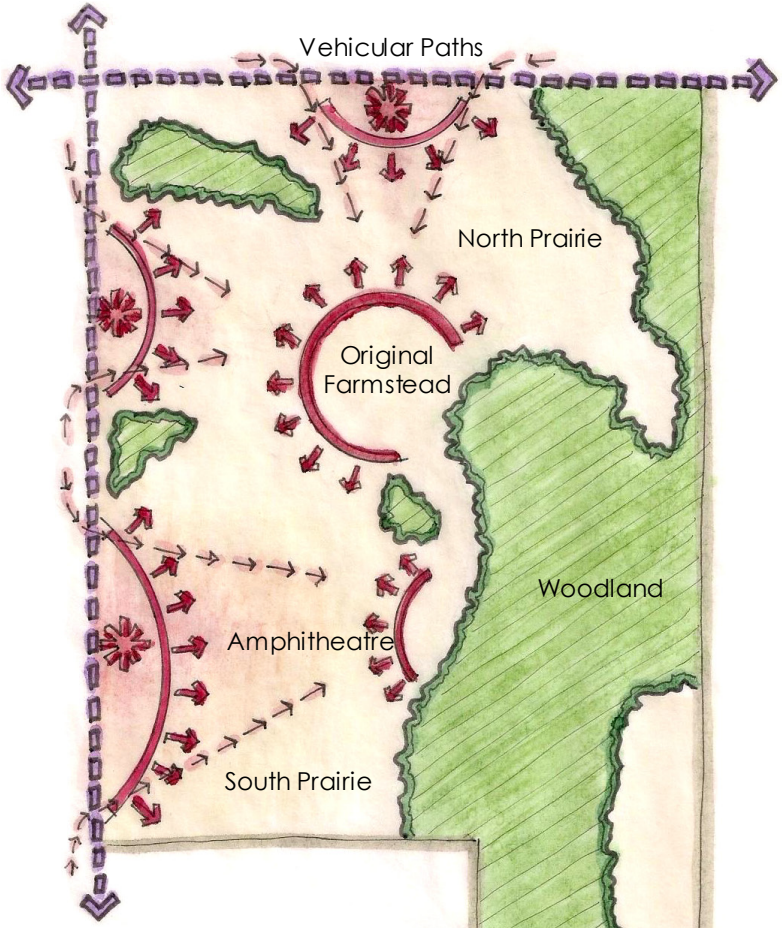
# 3.3 : Existing Park Plan

NORTH

The map below is the current park plan that the parks department uses. It becomes evident by looking at the existing conditions that there is very little permanent development. The built structures, for the most part are centrally clustered, as that was where the original farmstead was. A large portion, almost the entire eastern half of the site is wooded area. This area is where the majority of the trails run. Also on the site there are multiple bodies of water that help to determine where additions can be made to the park. Beside the wooded area, the second use that takes up a large portion of the park is the prairies. These existing uses were used to help guide the placement of proposed design elements.

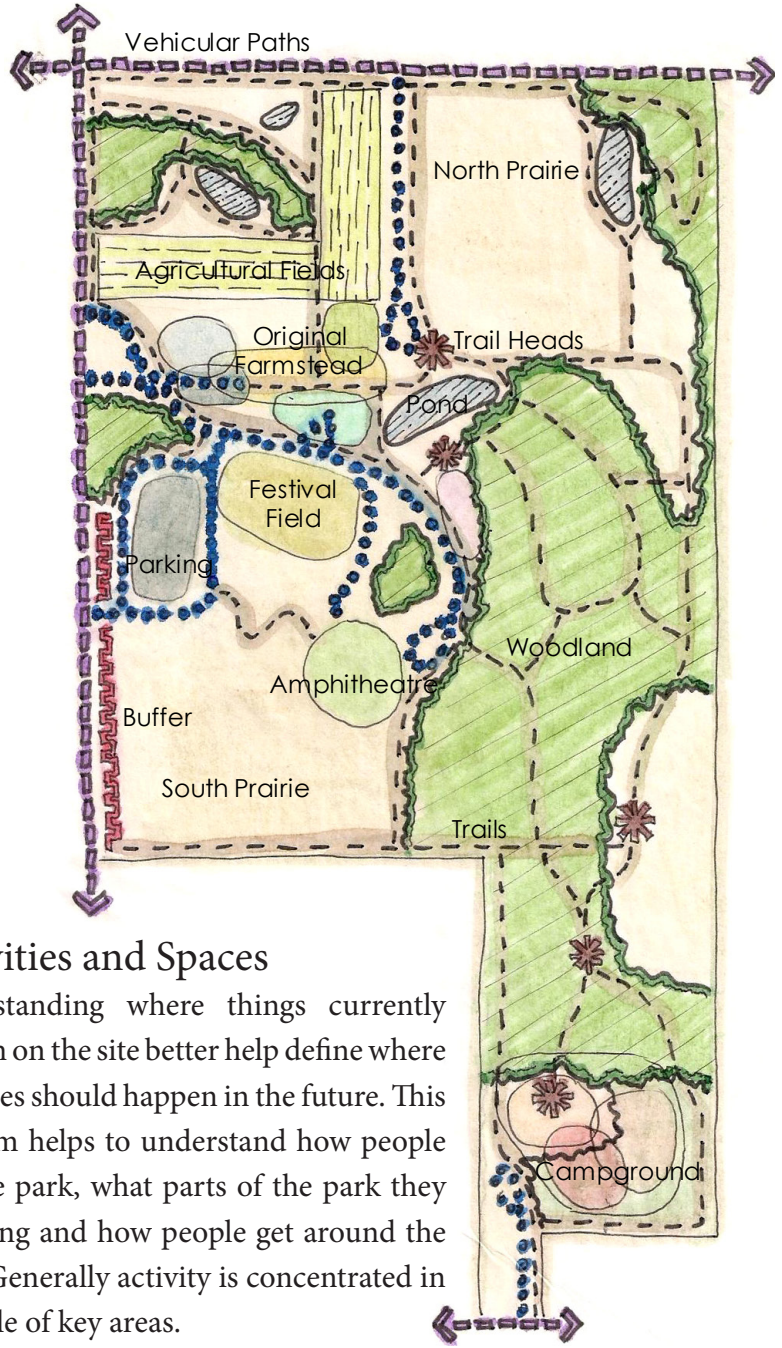


# 3.4 : Park Inventory




## Entrances and Viewsheds

One of the main issues the park faces to today is its definition to people passing by. When driving past there is nothing to make you feel like something special is going on there. By understanding where people can see into the site and where people can enter the site, a design could be formulated to better attract visitors.

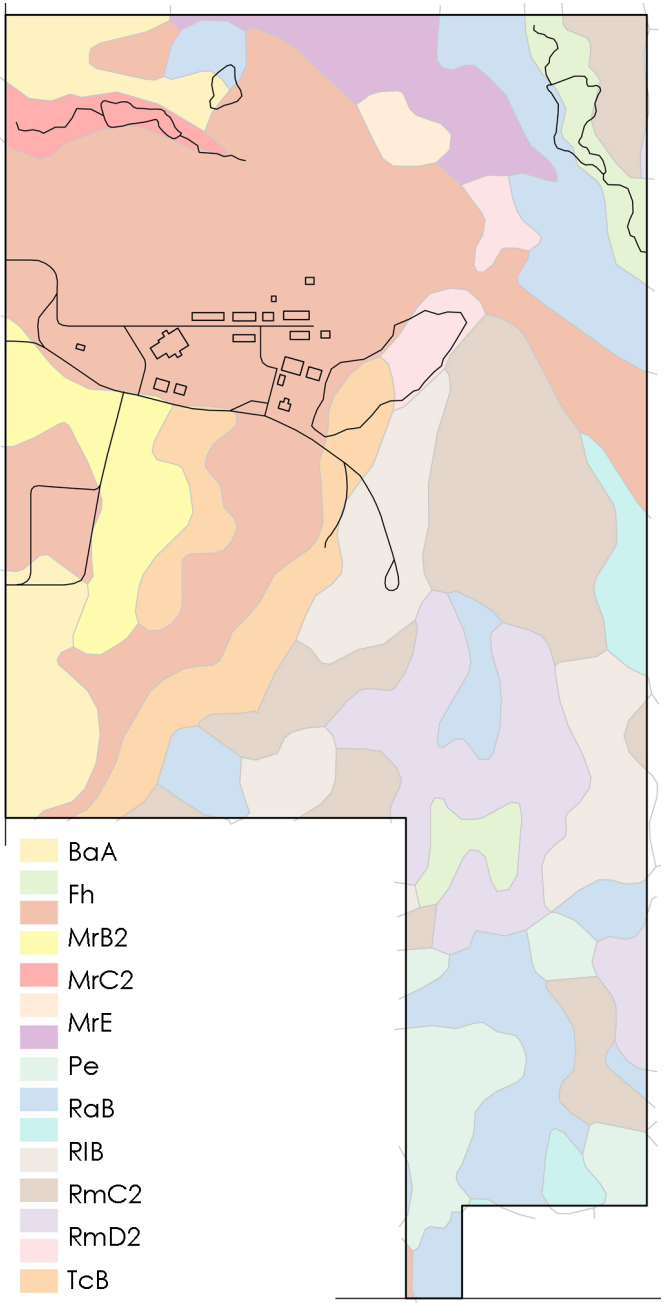



## Activities and Spaces

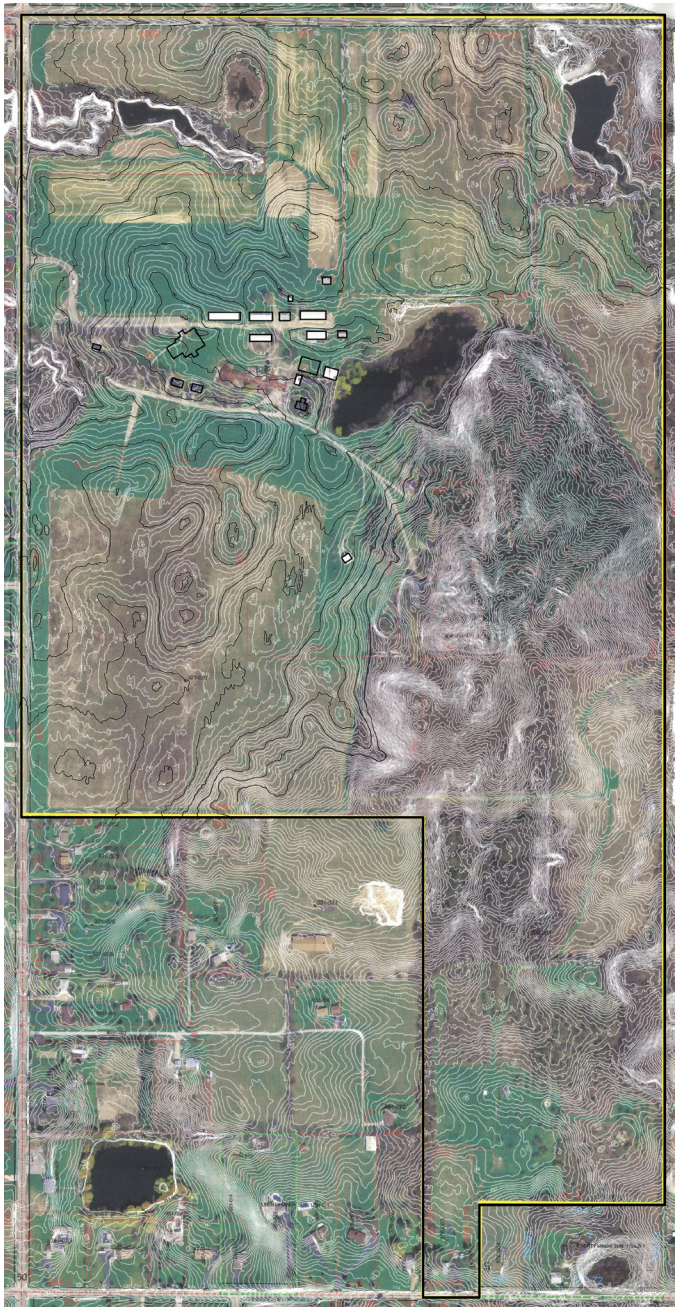
Understanding where things currently happen on the site better help define where activities should happen in the future. This diagram helps to understand how people use the park, what parts of the park they are using and how people get around the park. Generally activity is concentrated in a couple of key areas.

NORTH

## Soils




## Topography



# 3.5 Park Analysis

The previous couple pages of maps help to define the existing park to be able to generate ideas for the future park. Because of the structure of the parks soil and topography certain activities are delegated to specific areas. Assessing the park's surrounding context helps provide a base for design decisions to be made when updating Sunset Hill Farm County Park's masterplan. The 238 acre park is located in unincorporated Porter County's Liberty Township, just ten minutes north of Valparaiso and fifteen minutes south of Chesterton. The major way to access the park is by automobile so roads that connect the site play a major role in accessibility of the park. Fortunately, bordering the north side of the site is Route 6 and a half-mile to the east is State Road 49, which are two major automobile thoroughfares in the region.

The population of Porter County totaled 164,343 people as of the 2010 census count. At this time the median age was 38.4 years with aracial make-up of 85% White, 8.5% Latino, 3% is African-American, 1.2% Asian, and 2.3% an additional race.The median household income of the county was $61,000 compared to the state median income of $48,000.

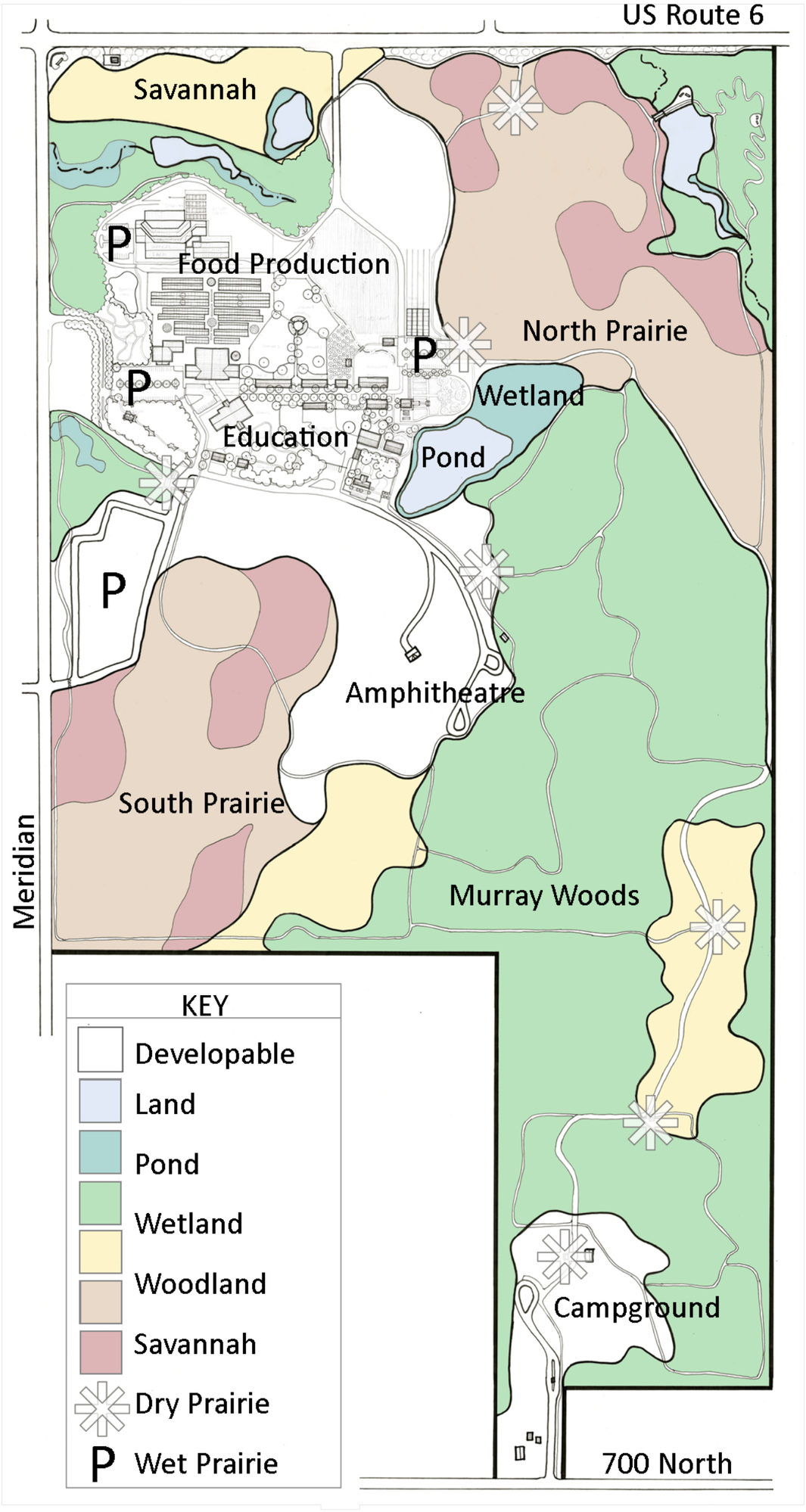
Some of the most recent projects that are being developed in the area include the new 450,000 square foot Porter Regional Hospital, the Porter Medical Campus aPUD (planned urban development) of office and commercial buildings, and 400+ lot Senior Living Community. Additionally,a corridor plan was recently approved that proposes creating a neighborhood village district at the intersection of Meridian Road.

The natural systems of Sunset Hill include woodland, prairie, and wetlands which define the property and make it unique. The woodland covers a total of approximately 77 acres of the property. The wetland habitats on the site are diverse with ponds, marshes, and riparian zones. The one stream system, Damon Run Tributary, carries water through the northeast section of the park, and contains a wide variety plant and animal life. There are three ponds within the park. The topography variations contribute to many of the different ecological habitats but they also provide many great views. Mainly consisting of rolling topography, the elevation change is approximately 100' from the highest to the lowest point in the park; although there are portions in the northern and western sections that are relatively flat. The property is made up of eight (8) soil types, Morley Series being the most dominate. The Morley Series consists of very deep, moderately drained dense till typically found in plains and moraines, with slopes from 1 to 18 percent.

# 3.6 : Park MAster Plan



The diagrammatic master plan below helps to visualize where all these different spaces will be happening on the site. The colored areas depict the different ecological zones and the areas left in white show where the developable land is. These are the areas where the recreational and food production activities will happen. These areas were identified by analyzing the current land use of the park, the soil makeup, and the topography of the site. On this map the trail system has also been mapped out with the trail heads being identified with a special marker. The park has been changed so that the activities flow better.



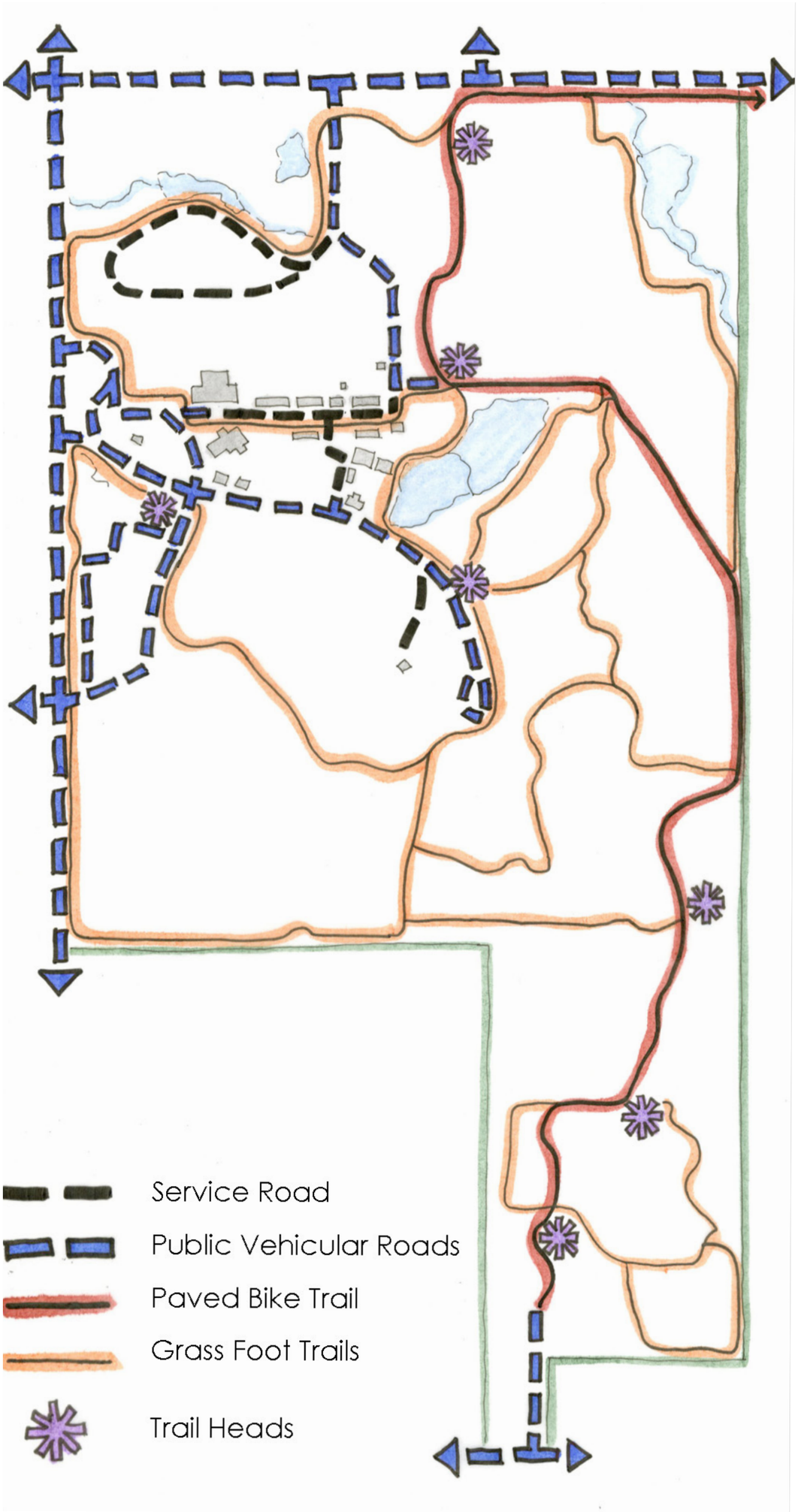
# 3.7 : Park Circulation







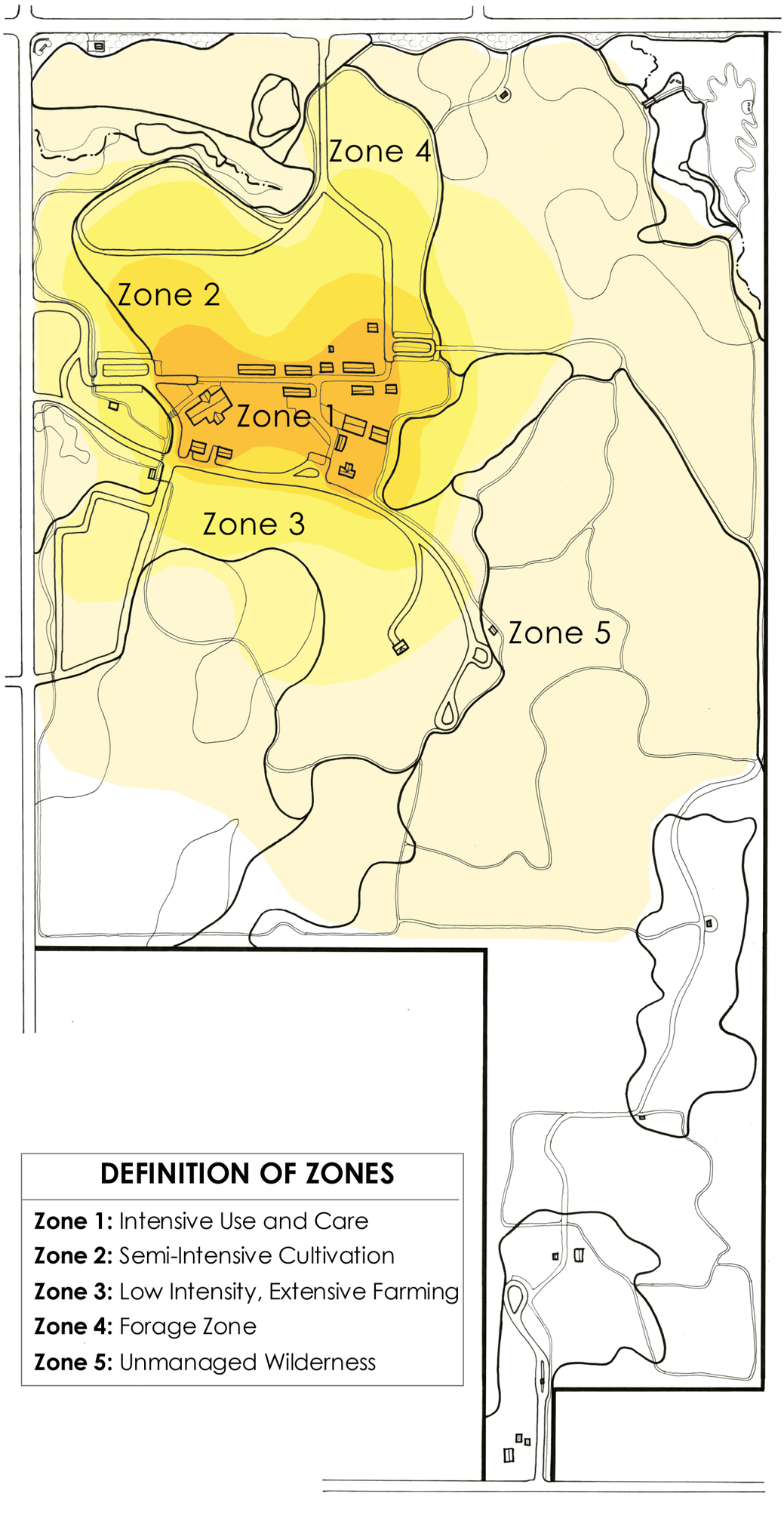
Working off the previous map of the proposed master plan, this map identifies specifically how the park functions from a circulation stand point. Starting with the vehicular circulation, new routes have been added. An entrance of Route 6 and anew service drive are the main changes. The red trail indicates two things. This is a proposed extension of the Kankakee-Dunes Trail that is also a paved trail to allow for service vehicles to get from one end of the site to the other. This is the only possible location for this route because of the topography through the wooded area. The orange trails are foot traffic only which will be mainly used by the runner and walkers who frequently use the site today.



# 3.8 : Zone and Sector Plan



The plan below is a diagrammatic representation of a home permaculture idea that has been adapted for a larger scale project. The zone and sector organization of a design revolves around locating items by their amount of upkeep. Depending on how intensive the landscape is determines how close it should be located to the occupied facility, like a house. Here, Sunset Road was used as the "home" as it is the heart of the development, to be the central organizing feature of the park. So in the immediate context of Sunset Road the most intensive systems would be placed, like the vegetable gardens that need watering. As one transitions farther from the house it becomes a more and more self-sustaining.




**DEFINITION OF ZONES**

**Zone 1:** Intensive Use and Care
**Zone 2:** Semi-Intensive Cultivation
**Zone 3:** Low Intensity, Extensive Farming
**Zone 4:** Forage Zone
**Zone 5:** Unmanaged Wilderness

# 3.9.1 : Ecological Zone Detail Design

The first zone of detailed exploration in the project was the ecological zone. With rough habitats already on the site a large part of the expanded development and improvement to the park would be done with a long term recovery and maintenance plan for these areas because they have been heavily invaded by invassives.

A sampling was done of a section of the wooded area and very few valuable species were identified. The plot consisted of mainly low quality species that were short lived and did not provide many beneficial features to the quality of the habitat. A tree inventory was also done for the park which showed very similar results. There was a large number of ashes and box elders.

In this section of the project plant lists were generated for all the areas that were identified in the master plan. By determining what ecosystems needed to be established and where, a list of plants could be generated to be plugged into these zones every time a new planting would be introduced. This not only covered the woodland, prairie, and wetlands, but also more specific planting like food production, stormwater management, and lawn-alternatives.

Large-scale planting plans were not done for this part of the design as there are no plans in the immediate future to do a completely structured replanting. The parks department is in the process of looking for funding for a wetland and prairie restoration, so a plan has been explored to address this possibility. After meeting with local horticulturist, and plant restoration specialist, Kevin Tungesvick, seed mixes and a initial maintenance plan were developed to help successfully get these new communities established. These plans were taken as far as a rough price estimate for the project.

# Prairie Ecological Zone

Little Bluestem
- Habit:
- Qualities:

Indian Grass
- Habit:
- Qualities:

Rough Blazing Star
- Habit:
- Qualities:

Riddell's Goldenrod
- Habit:
- Qualities:

# Prairie Restoration Seed Mix: Dry

| | Scientific Name | Common Name | oz/acre |
|---|---|---|---|
| Grasses | *Bouteloua curtipendula* | Side-Oats Grama | 32 |
| | *Carex bicknellii* | Prairie Oval Sedge | 2 |
| | *Carex muhlenbergii* | Sand-Bracted Sedge | 2 |
| | *Elymus canadensis* | Canada Wild Rye | 32 |
| | *Elymus virginicus* | Virginia Wild Rye | 4 |
| | *Schizachyrium scoparium* | Little Bluestem | 48 |
| | *Sporobolus heterolepis* | Prairie Dropseed | 8 |
| Forbs | *Allium cernuum* | Nodding Wild Onion | 1 |
| | *Asclepias tuberosa* | Butterfly Weed | 1 |
| | *Aster azureus* | Sky Blue Aster | 1 |
| | *Aster ericoides* | Heath Aster | 0.5 |
| | *Aster laevis* | Smooth Aster | 2 |
| | *Baptisia leucantha* | White False Indigo | 2 |
| | *Coreopsis lanceolata* | Lance-Leaf Coreopsis | 3 |
| | *Coreopsis palmata* | Plains Coreopsis | 2 |
| | *Echinacea pallida* | Pale Purple Coneflower | 3 |
| | *Echinacea purpurea* | Purple Coneflower | 4 |
| | *Eryngium yuccifolium* | Rattlesnake Master | 3 |
| | *Helianthus mollis* | Downy Sunflower | 1 |
| | *Helianthus occidentalis* | Western Sunflower | 2 |
| | *Lespedeza capitata* | Round-Headed Bush Clover | 2 |
| | *Liatris aspera* | Rough Blazing Star | 1 |
| | *Liatris scariosa var nieuwlandii* | Savanna Blazing Star | 1 |
| | *Liatris spicata* | Dense Blazing Star | 1 |
| | *Monarda fistulosa* | Bergamot | 0.5 |
| | *Parthenium integrifolium* | Wild Quinine | 2 |
| | *Penstemon digitalis* | Foxglove Beardtongue | 1 |
| | *Penstemon hirsutus* | Hairy Beardtongue | 1 |
| | *Petalostemum purpureum* | Purple Prairie Clover | 2 |
| | *Potentilla arguta* | Prairie Cinquefoil | 1 |
| | *Pycnanthemum virginianum* | Mountain Mint | 0.5 |
| | *Ratibida pinnata* | Yellow Coneflower | 2 |
| | *Rudbeckia hirta* | Black-Eyed Susan | 4 |
| | *Solidago nemoralis* | Gray Goldenrod | 1 |
| | *Solidago riddellii* | Riddell's Goldenrod | 1 |
| | *Solidago speciosa* | Showy Goldenrod | 1 |
| | *Veronicastrum virginicum* | Culver's Root | 0.5 |

## Low Stature Dry Prairie Mix

About the Mix

- A mix of grasses and wildflowers that is suitable for well-drained soils in full sun situations. The mix works especially well in sandy or gravelly outwash soil. The low stature mix requires a little more mowing maintenance during the first three years in order to prevent the establishment of aggressive perennial weeds.

- Price/acre = $1,146.00
- Price/1/4 acre = $362.00
- lbs Grasses/acre = 8 (128 oz.)
- lbs Forbs/acre = 3 (48 oz.)
- Seeds/acre = 2,940,800
- Seeds/sq. ft. = 68

# Prairie Restoration Seed Mix: Wet

| | Scientific Name | Common Name | oz/acre |
|---|---|---|---|
| Sedges/Grasses | *Andropogon gerardii* | Big Bluestem | 16 |
| | *Carex annectans xanthocarpa* | Yellow Fox Sedge | 2 |
| | *Carex frankii* | Frank's Sedge | 2 |
| | *Carex vulpinoidea* | Fox Sedge | 6 |
| | *Elymus canadensis* | Canada Wild Rye | 32 |
| | *Elymus virginicus* | Virginia Wild Rye | 32 |
| | *Glyceria striata* | Fowl Manna Grass | 2 |
| | *Panicum virgatum* | Switchgrass | 4 |
| | *Sorghastrum nutans* | Indian Grass | 16 |
| Forbs | *Aster firmus* | Shining Aster | 1 |
| | *Aster novae-angliae* | New England Aster) | 1 |
| | *Aster umbellatus* | Flat-Top Aster | 1 |
| | *Baptisia leucantha* | White False Indigo | 2 |
| | *Cassia hebecarpa* | Wild Senna | 3 |
| | *Coreopsis tripteris* | Tall Coreopsis | 3 |
| | *Echinacea purpurea* | Purple Coneflower | 4 |
| | *Eryngium yuccifolium* | Rattlesnake Master | 2 |
| | *Helianthus grosseserratus* | Sawtooth Sunflower | 1 |
| | *Heliopsis helianthoides* | False Sunflower | 3 |
| | *Liatris spicata* | Dense Blazing Star | 2 |
| | *Monarda fistulosa* | Bergamot | 0.5 |
| | *Penstemon digitalis* | Foxglove Beardtongue | 0.5 |
| | *Pycnanthemum virginianum* | Mountain Mint | 0.5 |
| | *Ratibida pinnata* | Yellow Coneflower | 4 |
| | *Rudbeckia fulgida speciosa* | Showy Black-Eyed Susan | 3 |
| | *Rudbeckia hirta* | Black-Eyed Susan | 4 |
| | *Rudbeckia subtomentosa* | Sweet Black-Eyed Susan | 3 |
| | *Silphium integrifolium* | Rosinweed | 2 |
| | *Silphium terebinthinaceum* | Prairie Dock | 2 |
| | *Solidago riddellii* | Riddell's Goldenrod | 1 |
| | *Solidago rigida* | Stiff Goldenrod | 2 |
| | *Vernonia fasciculate* | Smooth Ironweed | 2 |
| | *Veronicastrum virginicum* | Culver's Root | 0.5 |

## Wet Mesic Prairie Mix

About the Mix

- A mix of sedges, grasses and wildflowers that can tolerate seasonal saturation, as well as drier conditions during the end of the season in summer and fall.

- Price/acre = $885.00
- Price/1/4 acre = $296.00
- lbs Grasses/acre = 7 (112 oz.)
- lbs Forbs/acre = 3 (48 oz.)
- Seeds/acre = 3,516,100
- Seeds/sq. ft. = 81

# Prairie Restoration

## Installation and Maintenance Guidelines

Deciding on What to Plant

- Soils dictates what can grow where (check topography to see about wet and dry prairies)
- Use a maximum of 2 mixes
- Identify transition are to other ecological zones (introduce heavy seeded trees)

Preparing the Land

- Clear early successional plants and woody plants
- Treat with herbicide application, Round-up-like chemical, 3% Glyphosate (are other options, this is the best)
    - Takes a full season, 3 treatments applied
    - Apply in May, late June, and September

Sowing the Seed Mixes

- Before sowing, ensure thatch is not too deep (3"+ too thick, just grass is fine)
- Drill seed mixes
- Dormant Sow in September, shortly after finishing herbicide treatment

Maintaining

- Plants will emerge in spring (will have better blooms)
- Protect over first 3 years of establishment
- Must be mowed once a month through the first year
- If it will be burned, consider paths and permanent structures

# Wet Ecological Zone

Switchgrass

- Habit:
- Qualities:

Fox Sedge

- Habit:
- Qualities:

Boneset

- Habit:
- Qualities:

Swamp Milkweed

- Habit:
- Qualities:

# Wet Ecological Zone

## Attractive and Functional Plants for Rain Gardens

| | Scientific Name | Common Name | Bloom Time | Bloom Color | Light | Inundation Time (hours) |
|---|---|---|---|---|---|---|
| Grasses/Sedges/Rushes | *Carex emoryi* | Riverbank Tussock Sedge | May-June | Green | Full Sun-Part Shade | > 24 |
| | *Carex grayii* | Burr Sedge | May-July | Green | Part Sun-Full Shade | > 24 |
| | *Carex muskingumensis* | Palm Sedge | May-July | Green | Full Shade | > 24 |
| | *Carex vulpinoidea* | Fox Sedge | May-June | Brown | Full Sun-Part Shade | > 24 |
| | *Deschampsia caespitosa* | Tufted Hair Grass | May-June | Brown | Full Sun | 2-24 |
| | *Panicum virgatum* | Switchgrass | July-Aug | Brown | Full Sun | > 24 |
| | *Scirpus cyperinus* | Woolgrass | July-Aug | Brown | Full Sun | > 24 |
| | *Scirpus pendulus* | Reddish Bulrush | June-July | Brown | Full Sun | > 24 |
| | *Sporobolus heterolepis* | Prairie Dropseed | Aug-Sep | Brown | Full Sun | 2-24 |
| Forbs (Wildflowers) | *Asclepias incarnata* | Swamp Milkweed | July-Aug | Pink | Full Sun | > 24 |
| | *Aster puniceus* | Swamp Aster | Sep-Oct | Lavender | Full Sun-Part Shade | 2-24 |
| | *Chelone glabra* | White Turtlehead | Aug-Sep | White | Full Sun | 2-24 |
| | *Eupatorium maculatum* | Spotted Joe-Pye Weed | Aug-Sep | Pink | Full Sun | 2-24 |
| | *Eupatorium perfoliatum* | Boneset | Aug-Sep | White | Full Sun | 2-24 |
| | *Filipendula rubra* | Queen of the Prairie | June-July | Pink | Full Sun | 2-24 |
| | *Gentiana andrewsii* | Bottle Gentian | Sep-Oct | Blue | Full Sun-Part Shade | 2-24 |
| | *Helenium autumnale* | Autumn Sneezeweed | Sep-Oct | Yellow | Full Sun-Part Shade | > 24 |
| | *Iris virginica shrevei* | Blue Flag | May-June | Blue | Full Sun-Full Shade | > 24 |
| | *Liatris spicata* | Dense Blazing Star | July-Aug | Purple | Full Sun | > 24 |
| | *Lobelia cardinalis* | Cardinal Flower | Aug-Sep | Red | Full Sun-Full Shade | 2-24 |
| | *Penstemon calycosus* | Smooth Penstemon | May-June | Purple | Full Sun-Full Shade | 2-24 |
| | *Physostegia virginiana* | Obedient Plant | Aug-Sep | Pink | Full Sun | 2-24 |
| | *Pycnanthemum virginianum* | Mountain Mint | July-Aug | White | Full Sun | 2-24 |
| | *Rudbeckia subtomentosa* | Sweet Black-Eyed Susan | Aug-Sep | Yellow | Full Sun-Part Shade | > 24 |
| | *Senecio aureus* | Golden Ragwort | April-May | Yellow | Full Sun-Full Shade | 2-24 |
| | *Solidago riddellii* | Riddell's Goldenrod | Sep-Oct | Yellow | Full Sun | 2-24 |
| | *Vernonia fasciculata* | Smooth Ironweed | Aug-Sep | Purple | Full Sun | > 24 |
| | *Veronicastrum virginicum* | Culver's Root | July-Aug | White | Full Sun-Part Shade | 2-24 |

# Wetland Restoration

| | Scientific Name | Common Name | oz/acre |
|---|---|---|---|
| Sedges/Grasses | *Carex frankii* | Frank's Sedge | 4 |
| | *Carex hystericina* | Porcupine Sedge | 1 |
| | *Carex granularis* | Meadow Sedge | 1 |
| | *Carex vulpinoidea* | Fox Sedge | 4 |
| | *Elymus riparius* | Riverbank Wild Rye | 10 |
| | *Elymus virginicus* | Virginia Wild Rye | 64 |
| | *Glyceria striata* | Fowl Manna Grass | 2 |
| | *Leersia oryzoides* | Rice Cut Grass | 2 |
| | *Panicum virgatum* | Switchgrass | 2 |
| | *Scirpus atrovirens* | Dark Green Bulrush | 2 |
| | *Spartina pectinata* | Prairie Cordgrass | 4 |
| Forbs | *Alisma subcordatum* | Water Plantain | 1 |
| | *Asclepias incarnata* | Swamp Milkweed | 2 |
| | *Aster firmus* | Shining Aster | 1 |
| | *Aster simplex* | Panicled Aster | 1 |
| | *Boltonia latisquama* | False Aster | 1 |
| | *Cassia hebecarpa* | Wild Senna | 2 |
| | *Eupatorium maculatum* | Spotted Joe-Pye Weed | 2 |
| | *Eupatorium perfoliatum* | Boneset | 1 |
| | *Helenium autumnale* | Autumn Sneezeweed | 1 |
| | *Lycopus americanus* | Water Horehound | 1 |
| | *Mimulus ringens* | Monkeyflower | 1 |
| | *Penstemon digitalis* | Foxglove Penstemon | 1 |
| | *Silphium perfoliatum* | Cupplant | 3 |
| | *Solidago gigantean* | Late Goldenrod | 1 |
| | *Solidago riddellii* | Riddell's Goldenrod | 1 |
| | *Verbena hastate* | Blue Vervain | 2 |
| | *Vernonia fasciculate* | Smooth Ironweed | 2 |

## Early Successional Wetland Mix

About the Mix

- This is a mix that contains tough, adaptable wetland species for detention ponds, stormwater wetlands or other situations with difficult hydrology or water quality. It is an economical mix designed for difficult situations.

- Price/acre = $708.00
- Price/1/4 acre = $246.00
- lbs Grasses/acre = 7 (96 oz.)
- lbs Forbs/acre = 3 (24 oz.)
- Seeds/acre = 5,307,400
- Seeds/sq. ft. = 122

Installation and Maintenance Guidelines

- Clear woody vegetation surrounding the area (not many good shade tolerant plants)
- Introduce gentle slope from wet edges to standing pond water
  - avoid excessive land moving, let the natural systems be how they are and plant accordingly
- Establish at least a 10' edge
- Create a water depth of 6" (plants establish best in this depth)
- Check for wildlife (they will eat and kill any plugs installed)
  - Canadian geese: fencing to keep through first year
  - Muskrats: have wildlife manager come in and remove
- Takes at least 1 full season to establish (must be maintained and overseen in this time)

# Forest/Woodland Ecological Zone

Cherry

- Habit:
- Qualities:

Serviceberry

- Habit:
- Qualities:

Hops

- Habit:
- Qualities:

Bearberry

- Habit:
- Qualities:

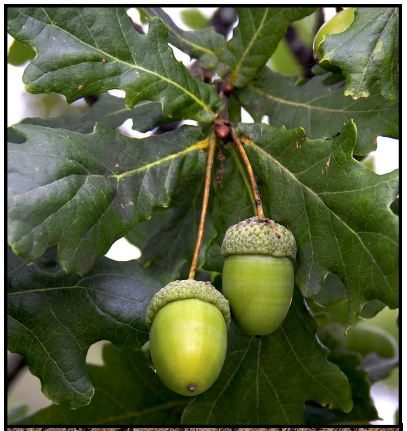
# Forest Garden

6 Layers : Tall Tree, Low Tree, Shrub, Groundcover, Vine, and Root

| | Botanical Name | Common Name | Nitrogen-Fixing | Wildlife Value | Insectary | Edible | Native |
|---|---|---|---|---|---|---|---|
| Tall Tree | Fagus | Beech | | | X | X | X |
| | Robinia | Black Locust | X | | | | X |
| | Prunus | Cherry | | X | X | X | X |
| | Gleditsia | Honey Locust | | X | X | | X |
| | Pyrus | European Pear | | | | X | |
| Low Tree | Laburnum | Golden Chain Tree | X | | | | |
| | Malus | Crabapple | | X | X | X | |
| | Prunus | Apricot | | | X | X | X |
| | Crataegus | Hawthorn | | X | | X | |
| | Corylus | Filbert | | X | | X | |
| Shrub | Elaeagnus | Russian Olive | X | X | | X | |
| | Baptisia | False Indigo | X | X | | | |
| | Amelanchier | Serviceberry | | X | X | X | |
| | Prunus | Nanking Cherry | | X | X | X | |
| | Vaccinium | Blueberry | | X | | X | |
| Vine | Humulus | Hops | | X | X | X | X |
| | Schisandra | Magnolia Vine | | X | | X | |
| | Clematis | Clematis | | | X | | |
| Groundcover | Actinidia | Hardy Kiwifruit | | | | X | |
| | Trifolium | Clover | X | | X | | |
| | Fragaria | Strawberry | | | X | X | |
| | Vaccinium | Lingonberry | | | | X | |
| | Arctostaphylos | Bearberry | | X | | X | |
| Root | Lomatium | Biscuit Root | | X | X | X | |
| | Amphicarpaea | Hog Peanut | X | | X | X | |
| | Camassia | Camas | | | X | X | |
| | Dioscorea | Mountain Yam | | | | X | |

# Plants To Sustain Wildlife

NORTH



Oak

- Habit:
- Qualities:



Willow

- Habit:
- Qualities:



Clover

- Habit:
- Qualities:



Corn/Maize

- Habit:
- Qualities:

# Native Plants To Sustain Wildlife

## Woody Plants Ranked By Number of Lepidoptera Species Supported

| Common Name | Family | Genus | Genus Members | Species Supported | Status |
|---|---|---|---|---|---|
| Oak | Fagaceae | *Quercus* | 80 | 532 | native |
| Willow | Salicaceae | *Salix* | 97 | 456 | native |
| Cherry, Plum, Peach | Rosaceae | *Prunus* | 31 | 456 | native |
| Birch | Betulaceae | *Betula* | 16 | 411 | native |
| Poplar, Aspen, Cottonwood | Salicaceae | *Populus* | 8 | 367 | native |
| Apple, Crabapple | Rosaceae | *Malus* | 4 | 308 | native |
| Maple, Boxelder | Aceraceae | *Acer* | 9 | 297 | native |
| Blueberry, Cranberry | Ericaceae | *Vaccinium* | 21 | 294 | native |
| Alder | Betulaceae | *Alnus* | 8 | 255 | native |
| Hickory, Pecan | Juglandaceae | *Carya* | 12 | 235 | native |
| Elm | Ulmaceae | *Ulmus* | 7 | 215 | native |
| Pine | Pinaceae | *Pinus* | 35 | 201 | native |
| Hawthorn | Rosaceae | *Crataegus* | 176 | 168 | native |
| Blackberry | Rosaceae | *Rubus* | 189 | 163 | native |
| Spruce | Pinaceae | *Picea* | 7 | 150 | native |
| Ash | Oleaceae | *Fraxinus* | 16 | 149 | native |
| Basswood, Linden | Tiliaceae | *Tilia* | 1 | 149 | native |
| Pear | Rosaceae | *Pyrus* | 0 | 138 | exotic |
| Rose | Rosaceae | *Rosa* | 21 | 135 | native |
| Filbert, Hazelnut | Betulaceae | *Corylus* | 2 | 131 | native |
| Walnut, Butternut | Juglandaceae | *Juglans* | 6 | 129 | native |
| Beech | Fagaceae | *Fagus* | 1 | 127 | native |
| Chestnut | Fagaceae | *Castanea* | 2 | 127 | native |
| Serviceberry, Juneberry | Rosaceae | *Amelanchier* | 14 | 124 | native |

These statistics in this chart and the following chart were done in a study one by Douglas Tallamy. He is demonstrating that by choosing native plants you can support a much larger number of insects, which in turn make the entire ecological system function better. Plants and insects are at the very base of our ecological systems, so by choosing plants that support these two categories, you support the ecological system at the core. The Lepidoptera species is one of the largest families of insects, as they account for 50% of all insects, which makes it a good indicator of plants that would be beneficial to plant.

# Native Plants To Sustain Wildlife

## Herbaceous Plants Ranked By Number of Lepidoptera Species Supported

| Common Name | Family | Genus | Species Supported | Status |
|---|---|---|---|---|
| clover | Fabaceae | *Trifolium* | 122 | native |
| corn, maize | Poaceae | *Zea* | 120 | exotic |
| goldenrod | Asteraceae | *Solidago* | 115 | native |
| aster | Asteraceae | *Aster* | 109 | native |
| dandelion | Asteraceae | *Taraxacum* | 87 | exotic |
| strawberry | Rosaceae | *Fragaria* | 81 | native |
| sunflower | Asteraceae | *Helianthus* | 75 | native |
| alfalfa, lucerne | Fabaceae | *Medicago* | 69 | exotic |
| cabbage, mustard, turnip, kale, broccoli | Brassicaceae | *Brassica* | 68 | exotic |
| beans | Fabaceae | *Phaseolus* | 66 | native |
| plantain | Plantaginaceae | *Plantago* | 66 | native |
| horsenettle, potato, tomato, eggplant | Solanaceae | *Solanum* | 61 | native |
| tobacco | Solanaceae | *Nicotiana* | 60 | exotic |
| cotton | Malvaceae | *Gossypium* | 59 | native |
| knotweed, smartweed | Polygonaceae | *Polygonum* | 58 | native |
| dock, sheep sorrel, curly dock | Polygonaceae | *Rumex* | 54 | native |
| lettuce | Asteraceae | *Lactuca* | 51 | native |
| ragweed | Asteraceae | *Ambrosia* | 48 | native |
| beet, beetroot | Chenopodiaceae | *Beta* | 44 | exotic |
| lambsquarters | Chenopodiaceae | *Chenopodium* | 42 | native |
| blue grass | Poaceae | *Poa* | 42 | native |
| joe-pye weed, thoroughwort, boneset | Asteraceae | *Eupatorium* | 41 | native |
| morning glory, redstar, sweet potato | Convolvulaceae | *Ipomoea* | 39 | native |
| pea (garden) | Fabaceae | *Pisum* | 38 | exotic |
| wheat | Poaceae | *Triticum* | 36 | exotic |
| sedge, burr reed | Cyperaceae | *Carex* | 36 | native |
| nettle | Urticaceae | *Urtica* | 35 | native |
| soybean | Fabaceae | *Glycine* | 33 | exotic |
| lupine | Fabaceae | *Lupinus* | 33 | native |
| asparagus, asparagus fern | Liliaceae | *Asparagus* | 32 | exotic |

# Turf Alternatives

Blue Grama

- Habit:
- Qualities:

Blue Fescue

- Habit:
- Qualities:

Grass Sedge

- Habit:
- Qualities:

Beak Grass

- Habit:
- Qualities:

# Low-Maintenance Turf Replacements

## Plant Recommendations Based On Environmental Types/Conditions

| | Common Name | Scientific Name | Size (inches) | Light | Soil |
|---|---|---|---|---|---|
| Woods | Obedient Plant | *Physostegia virginiana* | 12-36 | Full Sun-Part Shade | Average-Moist |
| | Prairie Dropseed | *Sporobolus heterolepis* | 24-36 | Full Sun-Part Shade | Well Drained-Partially Damp |
| | Wild Ginger | *Asarum canadense* | 6-12 | Part Sun-Full Shade | Well Drained (Alkaline) |
| | Blue Mistflower | *Conoclinium coelestinum* | 12-36 | Full Sun-Part Shade | Average-Moist |
| | Pennsylvania Sedge | *Carex pennsylvanica* | 6-12 | Part Sun-Part Shade | Well Drained (Sandy, Loamy) |
| Plains | Prairie Smoke | *Geum triflorum* | 6-12 | Full Sun | Dry-Average (Clay, Sandy) |
| | Bigleaf Aster | *Eurybia macrophylla* | 12-24 | Full Sun-Full Shade | Average-Moist (Clay) |
| | Side Oats Grama | *Bouteloua curtipendula* | 12-24 | Full Sun | Dry-Average (Clay) |
| | Blue Grama | *Bouteloua gracilis* | 6-12 | Full Sun-Part Shade | Dry-Average (Clay) |
| | Palm Sedge | *Carex muskingumensis* | 24 | Full Sun-Part Shade | Average-Wet (Clay) |
| | Northern Sea Oats | *Chasmanthium latifolium* | 24-48 | Part Sun-Full Shade | Average-Moist |
| Hills | Bearberry | *Arctostaphylos uva-ursi* | 6-12 | Full Sun-Part Shade | Dry-Average |
| | Turkish Speedwell | *Veronica liwanensis* | 6-12 | Full Sun-Part Shade | Average-Well Drained |
| | Bugleweed | *Ajuga reptans* | 6-12 | Morning Sun-Shade | Well-Drained |
| | Creeping Thyme | *Thymus praecox* | 6-12 | Sun-Afternoon Shade | Well-Drained |
| | Blue Fescue | *Festuca glauca* | 12 | Full Sun | Well-Drained |
| | Stonecrop | *Sedum rupestre* | 6-12 | Full Sun-Part Shade | Dry |

## Description of Environmental Types/Conditions

Woods: Most like the Midwest. Possible hot and dry summers with very cold winters. Plants in this zone must be able to withstand drought stress and winter cold.

Plains: Clay soils of the plains means damp conditions in spring and fall, but brick dry in the summer. The temperature and precipitation can vary widely, bloom time and growth time also fluctuate.

Hills: Many times the soils are very lean. There is little organic material and sometimes very rocky. Clay soils in these areas create extra problems. Generally the summers are extremely hot with bitter cold winters and constant drying winds.

# Replacing Exotic Groundcovers

## Plant Recommendations For Native Groundcovers

| Common Name | Scientific Name | Spacing | Light | Soil Moisture |
|---|---|---|---|---|
| **Brome-Hummock Sedge** | ***Carex bromoides*** | **10”** | **Full Shade** | **Mesic-Wet** |
| **Short-Headed Bracted Sedge** | ***Carex cephalophora*** | **10”** | **Full Shade** | **Mesic-Dry** |
| **Palm Sedge** | ***Carex muskingumensis*** | **10”** | **Full Shade** | **Mesic-Wet** |
| **Grass Sedge** | ***Carex jamesii*** | **8”** | **Full Shade** | **Mesic** |
| **Straight Styled Wood Sedge** | ***Carex radiate*** | **8”** | **Full Shade** | **Mesic** |
| **Beak Grass** | ***Diarrhena Americana*** | **12”** | **Full Shade** | **Mesic** |
| **Wild Stonecrop** | ***Sedum ternatum*** | **8”** | **Full Shade** | **Mesic** |
| **Golden Ragwort** | ***Senecio aureus*** | **10”** | **Part Sun-Full Shade** | **Mesic-Wet** |
| **Round-Leaved Ragwort** | ***Senecio obovatus*** | **8”** | **Part Sun-Full Shade** | **Mesic-Dry** |
| **Zig Zag Goldenrod** | ***Solidago flexicaulis*** | **10”** | **Full Shade** | **Mesic** |
| **Prairie Dropseed** | ***Sporobolus heterolepis*** | **12”** | **Sun** | **Mesic-Dry** |

Finding alternatives to the exotic lawn will be important as we transition to a more sustainable society. There are many native alternatives that we can choose instead of exotic lawns. These plants do not need to take up 100% of the space we have devoted to lawns, but small increments can be used to increase the function of our ecological systems. Native plants not only provide many benefits to our animals, but they also help to treat stormwater. On a large scale, like public parks, the use lawn alternatives could have huge benefits. These areas require much less maintenance to areas that would not otherwise be used.

# Food Production Zone

The following eight (8) charts of plants are a sampling of useful plants for food producing landscapes. The plants that are selected to be shown below are able to grow in the USDA Hardiness Zone 5, where Sunset Hill is located. It is just a small sampling of available plants, but this list gives a starting point to reference when looking for plants to pull from to implement in the park at anytime.

## Key to the Following Tables

| Useable Part | |
|---|---|
| Brk | Bark |
| Fruit | Fruit |
| Flr | Flower |
| Lf | Leaf |
| Oil | Oil |
| Rt | Root |
| Sap | Sap |
| Sd | Seed |
| Sdpod | Seedpod |
| Stm | Stem |

| Animal Use | |
|---|---|
| Chk | Poultry Forage |
| For | Forage |
| Hab | Provides Habitat |
| Ins | Attracts Beneficial Insects |

| Light | |
|---|---|
| Sun | Full Sun |
| Shd | Full Shade |
| P Shd/P Sun | Partial Sun/Shade |

| Other Uses | |
|---|---|
| Bio | Biomass |
| Bskt | Basketry |
| Dye | Dye |
| Fbr | Fiber Product |
| Hdg | Hedgerow Species |
| Md | Medicinal |
| Nutr | Nutrient-Accumulator |
| Sp | Soap |
| Soil | Soil Stabilization |
| Tea | Tea |
| Wnd | Windbreak Species |
| Wd | Lumber |

Productive and Edible Plants in a Polyculture Landscape/Garden : LARGE TREES

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| ***Carya species*** | **Hickory** | **Sd, Sap** | **Ins, Hab, Chk, For** | **Wd, Wnd, Hdg** | **Sun-P Shd** | |
| ***Juglans species*** | **Walnut** | **Sd** | **Hab, For** | **Md, Wd, Wnd, Hdg, Dye** | **Sun** | **Allelopathic** |
| ***Castanea species*** | **Chestnut** | **Sd** | **Ins, Hab, Chk, For** | **Md, Wd, Wnd, Hdg, Soil** | **Sun** | |
| ***Prunus cerasus*** | **Sour Cherry** | **Fruit** | **Ins, Hab, For** | **Tea, Wnd, Hdg** | **Sun** | |
| ***Quercus species*** | **Oak** | **Sd** | **Hab, Chk, For** | **Wd, Wnd, Hdg** | **Sun** | **W. Oaks less tannin in acorn** |
| ***Acer species*** | **Maple** | **Sap** | **Ins, Hab, For** | **Wd** | **Sun-P Shd** | |
| ***Fagus species*** | **Beech** | **Sd, Lf** | **Hab, For** | **Md, Wnd, Hdg** | **Sun-P Shd** | |
| ***Gleditsia triacanthos*** | **Honey Locust** | **Flr, Sd** | **Ins, Hab, Chk, For** | **Wd, Wnd, Hdg** | **Sun** | **Nitrogen-Fixer** |
| ***Robinia pseudoacacia*** | **Black Locust** | **Sdpod** | **Ins, Hab, Chk, For** | **Soil** | **Sun** | |
| ***Aesculus flava*** | **Yellow Buckeye** | **Sd, Sap** | **Ins, Hab, For** | **Wd, Sp** | **Sun-P Shd** | |
| ***Pinus species*** | **Pine** | **Sd** | **Hab, For** | **Wd, Wnd, Hdg** | **Sun** | **Evergreen** |

# Food Production Zone

## Productive and Edible Plants in a Polyculture Landscape/Garden : SMALL TREES

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| ***Asimina trilobata*** | **Pawpaw** | **Fruit** | **Hab, Chk, For** | **Dye, Fbr** | **P Sun-Shd** | |
| ***Corylus species*** | **Hazelnut** | **Sd, Oil** | **Hab, For** | **Wnd, Hdg, Bskt** | **Sun-P Shd** | |
| ***Crataegus species*** | **Hawthorn** | **Fruit** | **Ins, Hab, Chk, For** | **Wnd, Hdg** | **Sun** | |
| ***Cydonia oblonga*** | **Quince** | **Fruit** | | | | |
| ***Diospyros virginiana*** | **American Persimmon** | **Fruit** | **Hab, For** | **Hdg** | **Sun-P Shd** | |
| ***Elaeagnus umbellata*** | **Autumn Olive** | **Fruit** | **Ins, Hab, Chk, For** | **Wnd, Hdg** | **Sun** | **Nitrogen-Fixer** |
| ***Gymnocladus dioica*** | **Kentucky Coffee Tree** | **Sdpod** | **Hab, For** | **Hdg, Sp** | **Sun** | **Nitrogen-Fixer** |
| ***Malus species*** | **Apple** | **Fruit** | **Ins, Hab, For** | **Hdg** | **Sun** | |
| ***Morus species*** | **Mulberry** | **Fruit, Lf** | **Hab, Chk, For** | **Wnd, Hdg, Dye, Fbr** | **Sun** | |
| ***Prunus armeniaca*** | **Apricot** | **Fruit** | **Ins, Hab, For** | | **Sun** | |
| ***Prunus domestica*** | **Plum** | **Fruit** | **Ins, Hab, For** | **Wnd, Hdg** | **Sun** | |
| ***Prunus dulcis*** | **Almond** | **Sd** | **Ins, Hab, For** | **Wnd, Hdg** | **Sun** | |
| ***Prunus spinosa*** | **Sloe** | **Fruit** | **Ins, Hab, For** | **Md, Wnd, Hdg, Dye** | **Sun** | |
| ***Pyrus communis*** | **Pear** | **Fruit** | | | | |
| ***Sassafras albidum*** | **Sassafras** | **Lf, Brk, Fruit** | **Hab** | **Dye** | **Sun-P Shd** | |

# Food Production Zone

## Productive and Edible Plants in a Polyculture Landscape/Garden : SHRUBS

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| ***Amelanchier species*** | **Juneberry** | **Fruit** | **Ins, Hab, Chk, For** | **Wnd, Hdg** | **Sun** | |
| ***Aronia melanocarpa*** | **Chokeberry** | **Fruit** | **Ins, Hab, Chk, For** | **Md, Hdg, Dye** | **Sun-P Shd** | |
| ***Berberis vulgaris*** | **Barberry** | **Fruit** | **Hab, For** | **Tea, Wnd, Hdg, Fbr** | **Sun-P Shd** | |
| ***Calluna vulgaris*** | **Scotch Heather** | | **Ins** | **Tea, Md, Wnd, Hdg, Dye, Bskt** | **Full Sun** | **Acidic Soil, Evergreen** |
| ***Caragana arborescens*** | **Siberian Pea Shrub** | **Sd** | **Ins, Chk, For** | **Wnd, Hdg, Dye, Soil** | **Full Sun** | **Nitrogen-Fixer, Evergreen** |
| ***Celtis species*** | **Hackberry** | **Fruit, Sd** | **Hab, Chk, For** | **Wind, Hedge, Dye** | **Full Sun** | **Evergreen** |
| ***Elaeagnus angustifolia*** | **Russian Olive** | **Fruit** | **Ins, Hab, Chk, For** | **Wnd, Hdg** | **Sun** | **Nitrogen-Fixer** |
| ***Elaeagnus commutata*** | **Silverberry** | **Fruit** | **Ins, Hab, Chk, For** | **Wnd, Hdg, Fbr** | **Sun** | **Nitrogen-Fixer** |
| ***Hibiscus syriacus*** | **Mallow** | **Lf, Flr, Oil** | **Ins, Hab** | **Tea, Wnd, Hdg, Fbr** | **Sun** | |
| ***Hippophae rhamnoides*** | **Sea Buckthorn** | **Fruit** | **Hab, For** | **Md, Wnd, Hdg, Dye** | **Sun** | **Nitrogen-Fixer** |
| ***Holodiscus discolor*** | **Oceanspray** | **Fruit** | **Hab** | **Wd, Hdg** | **Sun-P Shd** | |
| ***Rhus species*** | **Sumac** | **Fruit** | **Ins, Hab, For** | **Wnd, Hdg, Dye, Soil** | **Sun-P Shd** | |
| ***Ribes species*** | **Currant** | **Fruit** | **Ins, Hab, Chk, For** | **Hdg** | **Sun-Shd** | |
| ***Rosa species*** | **Rose** | **Hips** | **Ins, Hab, For** | **Wnd, Hdg** | **Sun-P Shd** | |
| ***Rubus species*** | **Rasberry** | **Fruit** | **Ins, Hab, Chk, For** | **Hdg** | **Sun-Shd** | |
| ***Sambucus species*** | **Elderberry** | **Fruit, Flr** | **Ins, Hab, Chk, For** | **Md, Wnd, Hdg, Dye** | **Sun-P Shd** | **Leaves are Toxic** |
| ***Shepherdia argentea*** | **Buffaloberry** | **Fruit** | **Ins, Hab, Chk, For** | **Wnd, Hdg, Dye** | **Sun** | **Nitrogen-Fixer, Drought Resistant** |
| ***Vaccinium corymbosum*** | **Blueberry** | **Fruit** | **Ins, Hab, For** | **Hdg** | **Sun-P Shd** | **Acidic Soil** |
| ***Viburnum trilobum*** | **Cranberry** | **Fruit** | **Ins, Hab, For** | **Hdg** | **Sun-P Shd** | **Evergreen** |

# Food Production Zone

## Productive and Edible Plants in a Polyculture Landscape/Garden : PERENNIALS

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| *Medicago sativa* | Alfalfa | Lf, Sd | Ins, Hab, For | | Sun | Nitrogen-Fixer |
| *Asparagus officinalis* | Asparagus | Stm | | | Sun | |
| *Rheum Rhabarbarum* | Rhubarb | Stm | | Dye | Sun-P Shd | Leaves are Toxic |
| *Fragaria species* | Strawberry | Fruit, Lf | Ins | Nutr | Sun-P Shd | |
| *Cornus canadensis* | Bunchberry | Fruit | For | | P Sun-Shd | |
| *Chamaemelum nobile* | Chamomile | Flr | Ins | Tea, Dye | Sun-P Shd | |
| *Allium schoenoprasum* | Chive | Lf, Flr, Rt | Ins | Nutr | Sun-P Shd | |
| *Panax ginseng* | Ginseng | Rt | | Md | P Sun-Shd | |
| *Armoracia rusticana* | Horseradish | Rt | | | | |
| *Asclepias species* | Milkweed | Flr, Lf | Ins | Dye, Fbr | Sun | |
| *Mentha species* | Mint | Lf | | | | |
| *Oreganum vulgare* | Oregano | Lf | Ins | | Sun-P Shd | |
| *Rosmarinus officinalis* | Rosemary | Lf | | | | |
| *Salvia species* | Sage | Lf | Ins | | | |
| *Hedysarum boreale* | Sweet Vetch | Rt | Ins | Nutr | Sun | Nitrogen-Fixer |
| *Thymus species* | Thyme | Lf | Ins | Md, Tea | Sun | Repellent |
| *Sanguisorba minor* | Salad Burnet | Lf | | Soil | Sun-P Shd | |
| *Asarum caudatum* | Wild Ginger | | | Seasoning | Sun | |
| *Achillea millefolium* | Yarrow | Lf | Ins | Md, Tea, Dye, Nutr | Sun | |
| *Symphytum officinale* | Comfrey | Lf | Ins, Chk | Md, Nutr, Bio | Sun-P Shd | |
| *Cichorium intybus* | Chicory | Flr, Lf, Rt | Ins | Nutr | Sun | |

## Productive and Edible Plants in a Polyculture Landscape/Garden : CLIMBING PLANTS

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| ***Clematis species*** | **Clematis** | | **Ins** | | **Sun-P Shd** | |
| ***Cucumis sativus*** | **Cucumber** | **Fruit, Flr** | **Ins** | | **Sun** | **Grown as Annual** |
| ***Vitis species*** | **Grape** | **Fruit, Lf** | **Hab** | **Dye** | **Sun** | |
| ***Actinidia arguta*** | **Hardy Kiwi** | **Fruit** | | | **Sun** | |
| ***Humulus lupulus*** | **Hops** | **Flr, Lf** | **Ins, Hab** | **Md, Dye, Fbr** | | |
| ***Tropaeolum tuberosum*** | **Mashua** | **Flr, Lf, Rt** | | | **Sun** | **Grown as Annual** |
| ***Cucumis melo*** | **Melon** | **Fruit, Flr** | **Ins** | | **Sun** | **Grown as Annual** |
| ***Dioscorea batatas*** | **Mountain Yam** | **Rt** | | | **Sun-P Shd** | |
| ***Tropaeolum majis*** | **Nasturtium** | **Flr, Lf** | **Ins, Hab** | | **Sun** | **Grown as Annual** |
| ***Pisum sativum*** | **Pea** | **Fruit, Flr** | **Ins** | | **Sun** | **Nitrogen-Fixer** |
| ***Phaseolus coccineus*** | **Scarlet Runner Bean** | **Fruit, Flr** | **Ins** | | **Sun** | **Grown as Annual, Nitrogen-Fixer** |
| ***Cucurbita species*** | **Squash** | **Fruit, Flr** | **Ins** | | **Sun** | **Grown as Annual** |

## Productive and Edible Plants in a Polyculture Landscape/Garden : WATER PLANTS

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| ***Nelumbo nucifera*** | **Indian Water Lotus** | **Flr, Lf, Rt** | | | **Sun** | |
| ***Phragmites australis*** | **Reed** | **Lf, Rt** | **Hab** | **Dye, Fbr, Bskt** | **Sun-P Shd** | |
| ***Nymphaea tuberosa*** | **Tuberous Water Lily** | **Rt, Sd** | | | **Sun** | |
| ***Trapa natans*** | **Water Chestnut** | **Sd** | | | **Sun** | |
| ***Nasturtium officinale*** | **Watercress** | **Lf, Sd** | **Ins** | **Nutr** | **Shd-Sun** | **Grown as Annual** |
| ***Zizania aquatica*** | **Wild Rice** | **Sd** | | | | **Grown as Annual** |

## Productive and Edible Plants in a Polyculture Landscape/Garden : Herbaceous Plants Grown As Annuals

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| ***Ocimum Basilicum*** | **Basil** | **Lf** | | | | |
| ***Phaseolus species*** | **Bean** | **Sd, Sdpod** | | | | |
| ***Glycine Max*** | **Soy Bean** | **Sd** | | | | |
| ***Beta vulgaris*** | **Beet** | **Lf, Rt** | | | | |
| ***Brassica oleracea Botrytis Group*** | **Broccoli** | **Flr, Stm** | | | | |
| ***Brassica oleracea Gemmifera Group*** | **Brussels Sprouts** | **Lf** | | | | |
| ***Fagopyrum esculentum*** | **Buckwheat** | **Sd, Lf** | **Ins, Hab, Chk** | | **Sun-P Shd** | |
| ***Brassica oleracea Capatata Group*** | **Cabbage** | **Lf** | | | | |
| ***Daucus Carota var. sativus*** | **Carrot** | **Rt** | | | | |
| ***Brassica oleracea Botrytis Group*** | **Cauliflower** | **Flr** | | | | |
| ***Apium graveolens var. dulce*** | **Celery** | **Lf, Stm** | | | | |
| ***Beta vulgaris var. cicla*** | **Swiss Chard** | **Lf** | | | | |
| ***Brassica oleracea Acephala Group*** | **Collard** | **Lf, Flr** | **Hab** | | **Sun-P Shd** | |
| ***Zea Mays*** | **Corn** | **Sd** | | | | |
| ***Cuminum Cyminum*** | **Cumin** | **Sd** | | | | |
| ***Anethum graveolens*** | **Dill** | **Sd, Lf** | | | | |
| ***Solanum Melongena var. esculentum*** | **Eggplant** | **Fruit** | | | | |
| ***Cichorium species*** | **Endive** | **Lf** | | | | |
| ***Foeniculum vulgare*** | **Fennel** | **Lf, Sd, Rt** | **Ins, Hab, Chk** | **Nutr** | **Sun-P Shd** | |
| ***Allium sativum*** | **Garlic** | **Bulb, Lf, Flr** | | **Nutr** | **Sun** | **Repellent** |
| ***Brassica oleracea Acephala Group*** | **Kale** | **Lf, Stm, Flr** | **Hab** | | **Sun-Shd** | |

Productive and Edible Plants in a Polyculture Landscape/Garden :
HERBACEOUS PLANTS GROWN AS ANNUALS (continued)

| Scientific Name | Common Name | Useable Part | Animal Use | Other Uses | Light | Notes |
|---|---|---|---|---|---|---|
| ***Allium ampeloprasum var. porrum*** | **Leek** | **Bulb, Lf** | | | | |
| ***Avena sativa*** | **Oat** | **Sd** | | | | |
| ***Ablemoschus esculentus*** | **Okra** | **Sdpod** | | | | |
| ***Allium species*** | **Onion** | **Bulb, Lf, Flr** | | **Nutr** | **Sun** | **Repellent** |
| ***Petroselinum crispum*** | **Parsley** | **Lf** | | | | |
| ***Pastinaca sativa*** | **Parsnip** | **Rt** | | | | |
| ***Pisum species*** | **Pea** | **Sd, Sdpod** | | | | |
| ***Arachis hypogaea*** | **Peanut** | **Sd** | | | | |
| ***Capsicum species*** | **Pepper** | **Fruit** | | | | |
| ***Solanum tuberosum*** | **Patato** | **Tuber** | | **Bio** | **Sun** | |
| ***Raphanus sativus*** | **Radish** | **Rt, Tuber** | | | | |
| ***Brassica Napus Napobrassica Group*** | **Rutabaga** | **Rt** | | | | |
| ***Secale cereale*** | **Rye** | **Sd** | | | | |
| ***Spinacia oleracea*** | **Common Spinach** | **Lf** | | | | |
| ***Cucurbita Pepo var. melopepo*** | **Zucchini** | **Fruit** | | | | |
| ***Helianthus annuus*** | **Sunflower** | **Sd** | **Ins** | | **Sun** | |
| ***Ipomoea Batatas*** | **Sweet Patato** | **Tuber** | | | | |
| ***Lycopersicon Lycopersicum*** | **Tomato** | **Fruit** | | | | |
| ***Brassica Rapa Rasifera Group*** | **Turnip** | **Lf, Rt** | | | | |
| ***Citrullus lanatus*** | **Watermelon** | **Fruit** | | | | |
| ***Triticum aestivum*** | **Bread Wheat** | **Sd** | | | | |

## Natural/Ecological Zone

The design work for this part of the project largely revolved around research. The many plant lists that were generated for this section are intended to be a guide for the parks department, so that when they go to introduce new planting they can pull from these lists depending on what criteria they are using. The current ecological systems on the park are roughly established and could use some extra care and maintenance so that these habitats can establish more effectively. There wooded area of the part is located on the most topographically distinct land which provides for many different micro-climates where different plants can establish. Besides the wooded area the prairies could use some care. The parks department is currently seeking funding to start over with the prairies and do a full restoration. As it stands now both the prairies and the woodland have been overrun with exotics and invasives, which means an extensive plan would need to be put in place to fully recover these habitats.

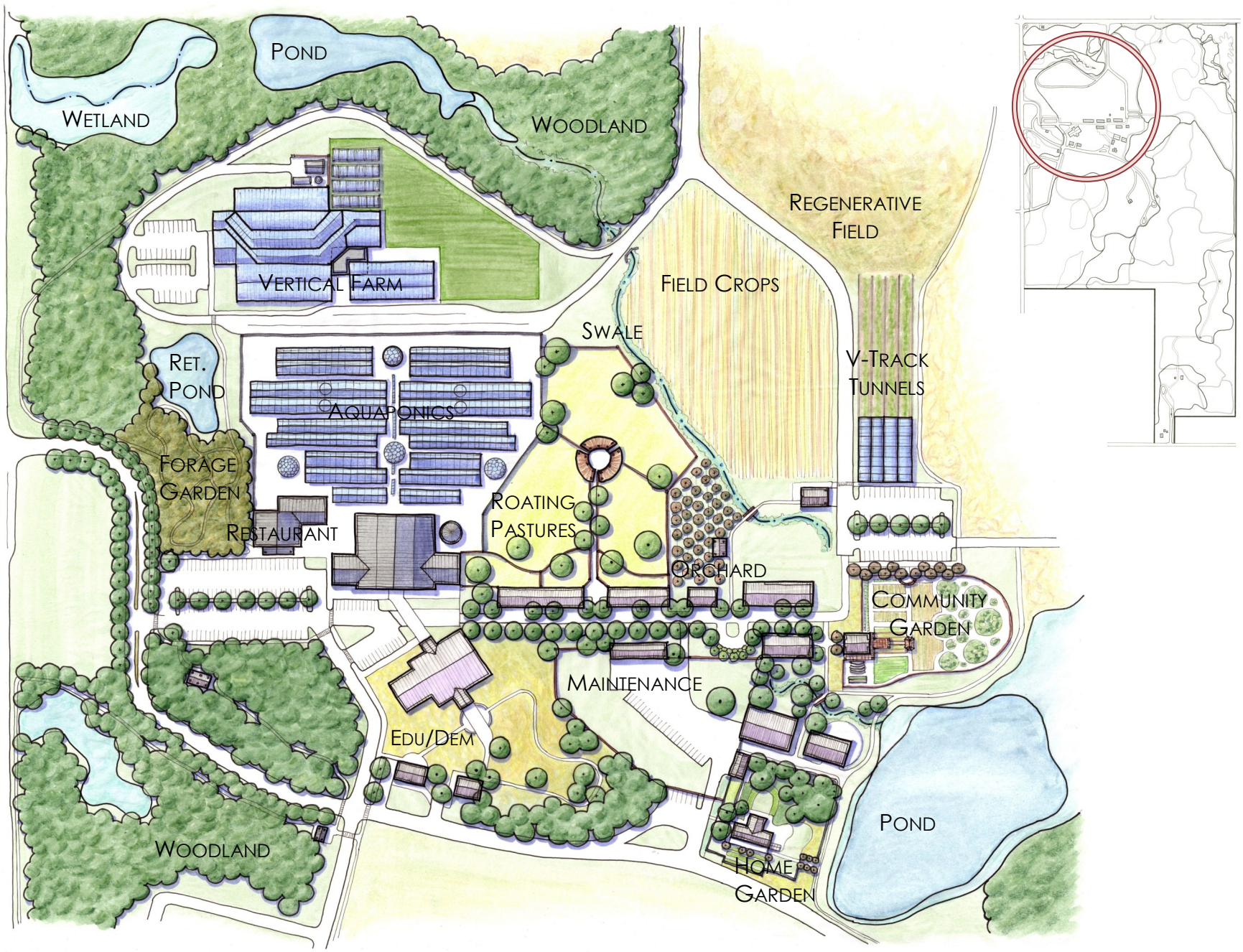
# 3.9.2 : Food Production Zone Detail Design

The food production aspect of this project is one of the more difficult things to design. So much of the passion people bring to producing food is not documented. It is a growing part of landscape architecture and our society though, which means more and more resources are becoming available. As people begin to realize how important food is, and the role it plays in our society these kinds of projects will continue to develop.

Sunset Hills proposed expansion and development plan includes incorporating food production into the landscape. For this project it has been taken a step further to make the park a demonstration area for the future of agriculture. The park looks to demonstrate and educate people on as many different kinds of food production as known or possible. By using the most innovative methods of producing food, the park can stay on the forefront of the movement and also become a research facility to monitor and produce reports on what kinds of successes they are having so that other people can begin to join the movement.

The food production side of the design has the most potential to create revenue for the parks department. By drawing people in for other activities they become exposed to this. The park would be able to become the central "good food" hub of the region with other markets and farms becoming the spokes of the system. By demonstrating all these different types of food producing techniques, the hope is that people will be inspired and take some of the ideas back home to start their own gardens. This become the third, and key layer to converting our society to more sustainable ways of life. Healthy, sustainable food needs to be produced on all levels of society to make significant impacts.

# Food Production Zone Site Plan



## Food Production Zone Site Plan

The design of the central food production zone revolves around two main axis's, Sunset Road and the main alley of the indoor farming operation. All the other spaces revolve off of these two (2) spaces. The most innovative farming techniques work off the indoor farming axis, and the more traditional techniques work off of Sunset Road, the original spine of the original farmstead. This space can be accessed from either entrance, the one off of Meridian or Route 6, but only service vehicles can cross through the entire site. Each entrance is set up to direct users to where their desired destination may be.

The following types of food related activities can be found on this part of the site (from left to right):

- Forest Forage Garden
- Restaurant (using local products)
- Market
- Research Facilities and Offices
- Vertical Farm
- Aquaponics/Hydroponics
- Traditional Greenhouses
- Nursery
- Rotating Pasture
- Orchard
- Field Crops
- Home Garden
- Community Garden
- High V-Track Tunnels

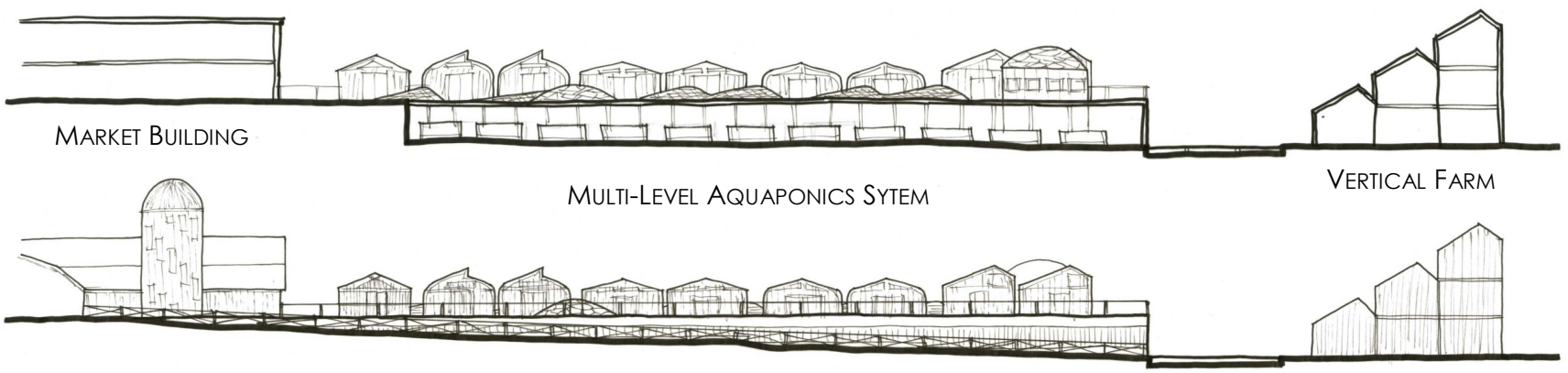
To transition from agricultural land back into natural land a research based program has been developed on the northeast corner of this area. This land was previously agricultural fields, so the new program allows for different areas to be set up to study how land recovers after the destruction brought upon it from traditional farming methods. There would be areas where plants would be introduced and other areas where the land is just left alone to track its recovery time.

The rotating pasture system is based off of Joel Salatin's techniques at Polyface Farms in Pennsylvania. The system is set up so that each animal in the rotation does another job. There is always an area of land that sits empty so it can regenerate while the other areas are being used. This means that the farm is not solely based on fruits, vegetables, and nuts. The original farmstead had chickens and cattle, so reintroducing these elements ties the park back to its past. Also, currently on site there are goats so this part of the operation could be expanded to take advantage of their products.

# Indoor Farming/Aquaponics System

Section

Elevation




Traditional Soil Starter

Microgreens

Aeroponics

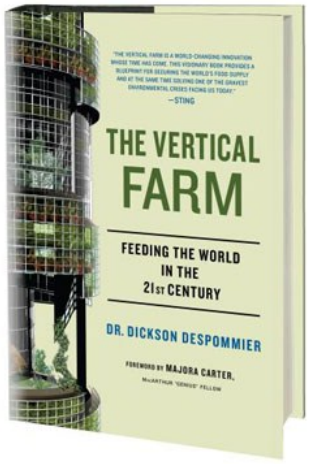
Hydroponic/NFT (Nutrient Film Technique)

Raft Aquaponics/ Deep Water Culture

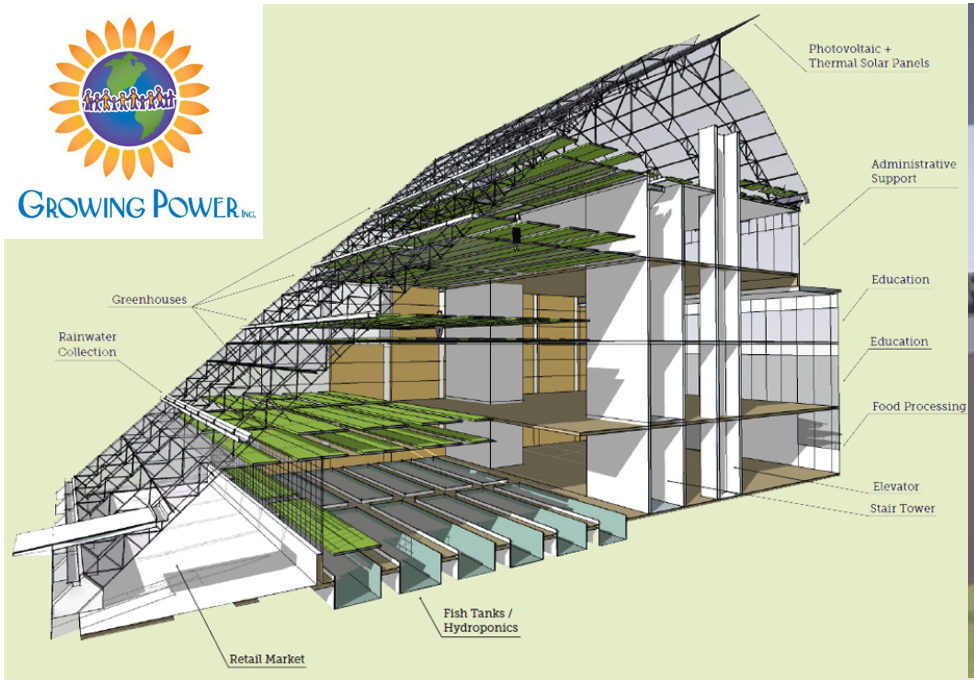
Vertical Flood and Drain Aquaponics

# INDOOR FARMING/VERTICAL FARM

## Form/Content of a Vertical Farm: Dr. Dickson Despommier



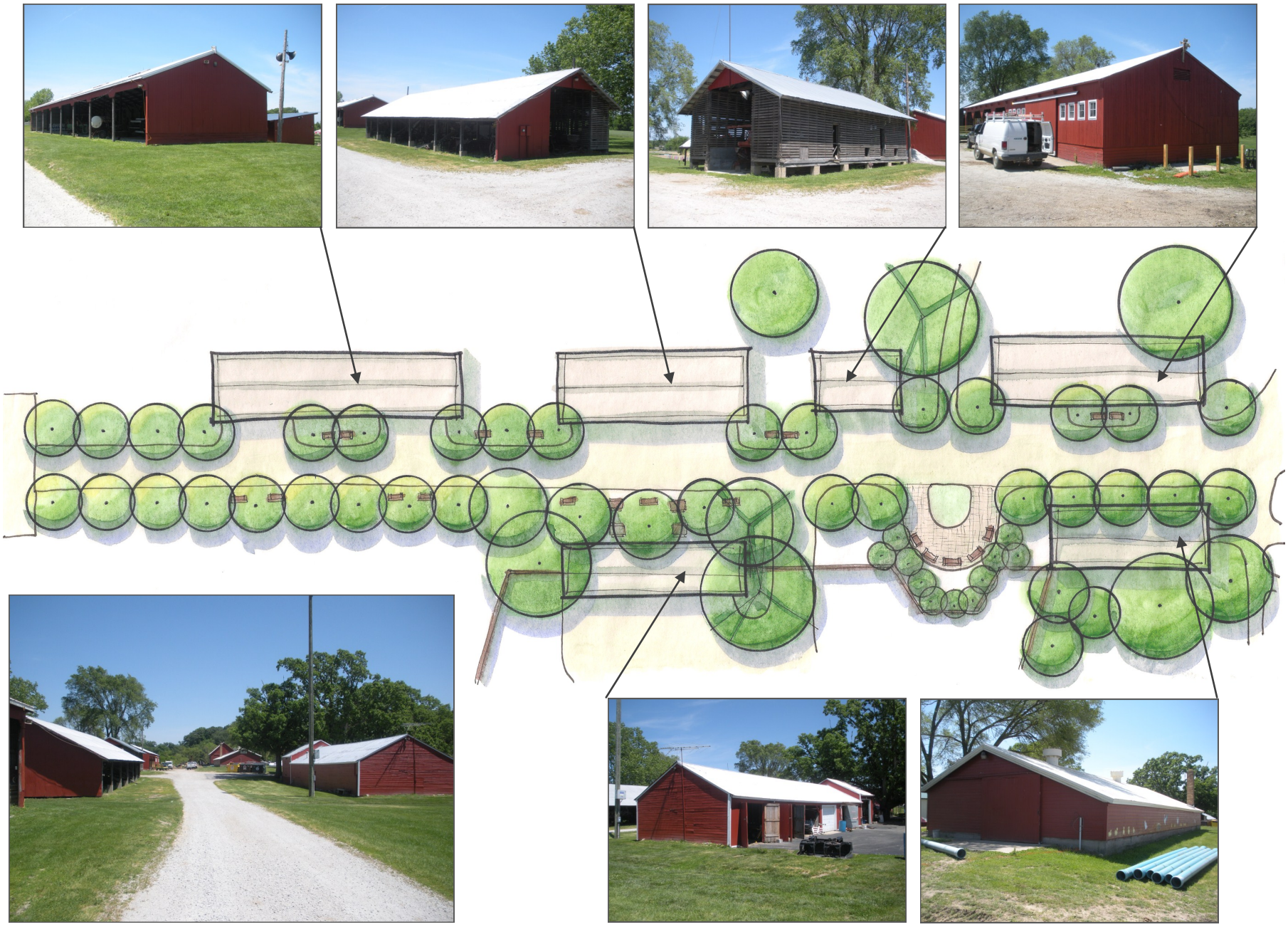

- Complex of Buildings in Close Proximity
  - Buildings: Food Growing Building
    Control Center
    Germination Nursery
    Laboratory
    Eco-Education/Tourist Center
    Green Market
    Restaurant
    Management Offices, Workers Area
- Plants grown in controlled spaces for safety (aquaculture and poultry raised in separate facilities)
- Modest Height (5 stories at the most), Flexible Interior Space, 1/8th of a city block wide
- Design should address: 1. Capturing Sunlight and Even Distribution of Light, 2. Capturing Passive Energy, 3. Barrier Design, 4. Maximization of Growing Space for Crops



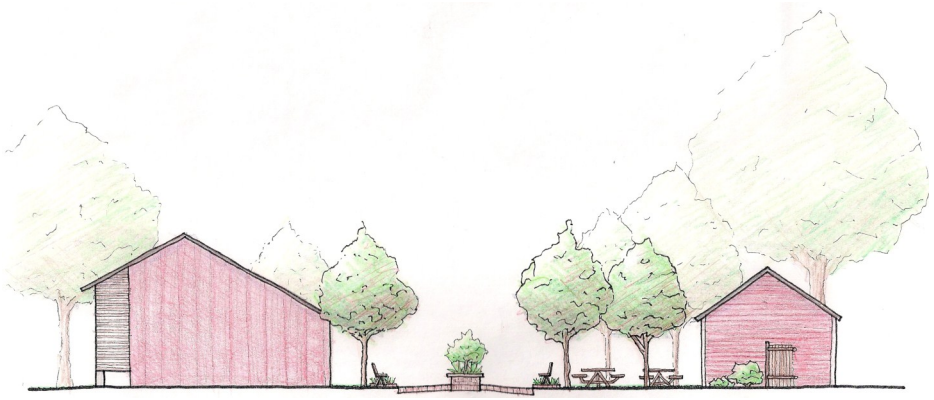

Growing Power's Proposed Vertical Farm Development . 27,000 square feet . Designed by: The Kubala Washatko Architects

# Sunset Road Existing Conditions

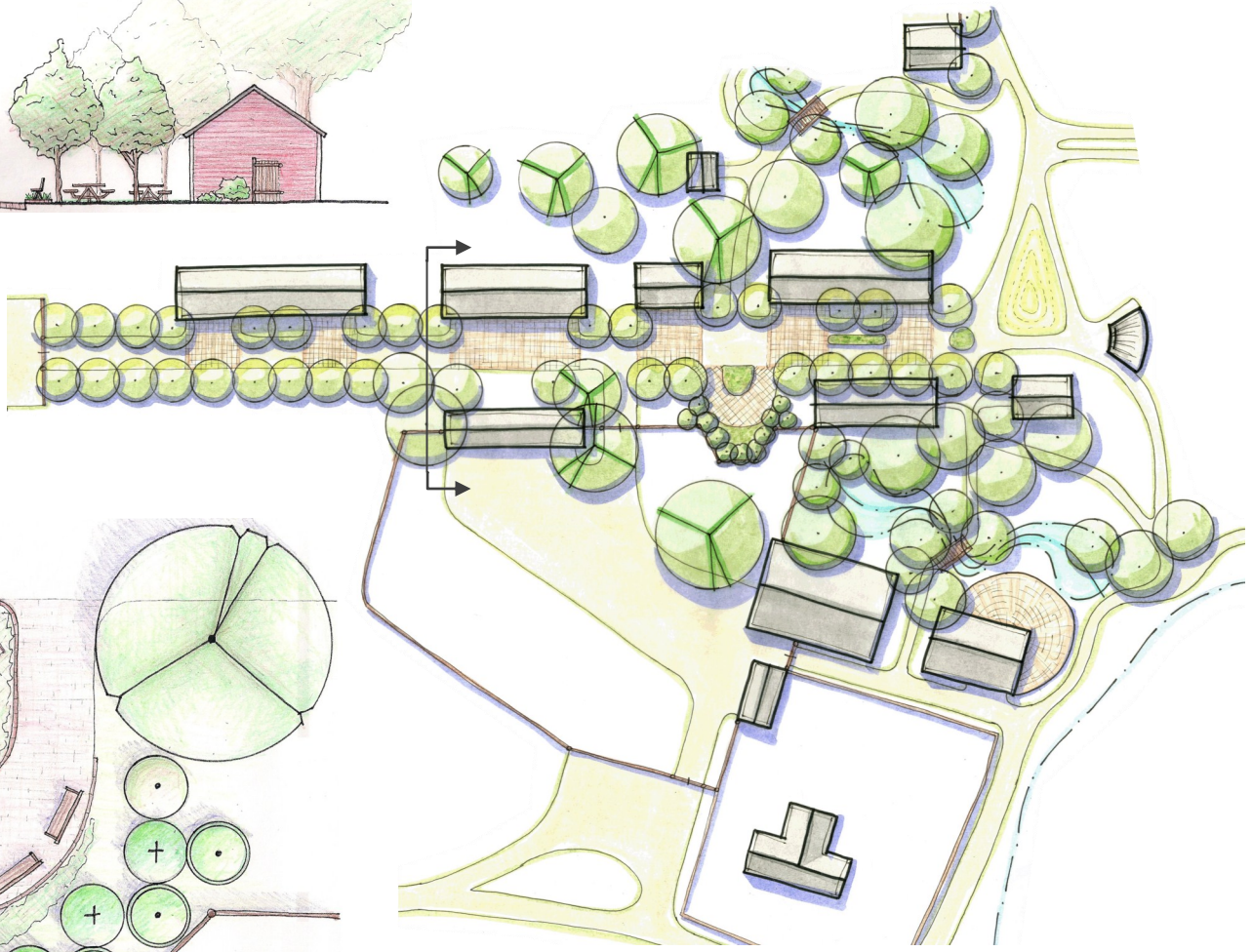
NORTH

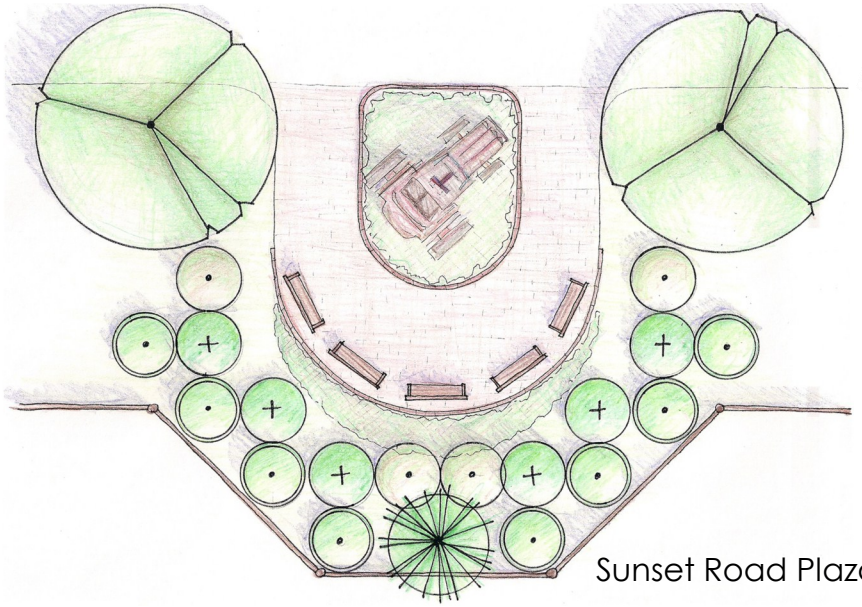


# Sunset Road Concept



Improved Sunset Road Section

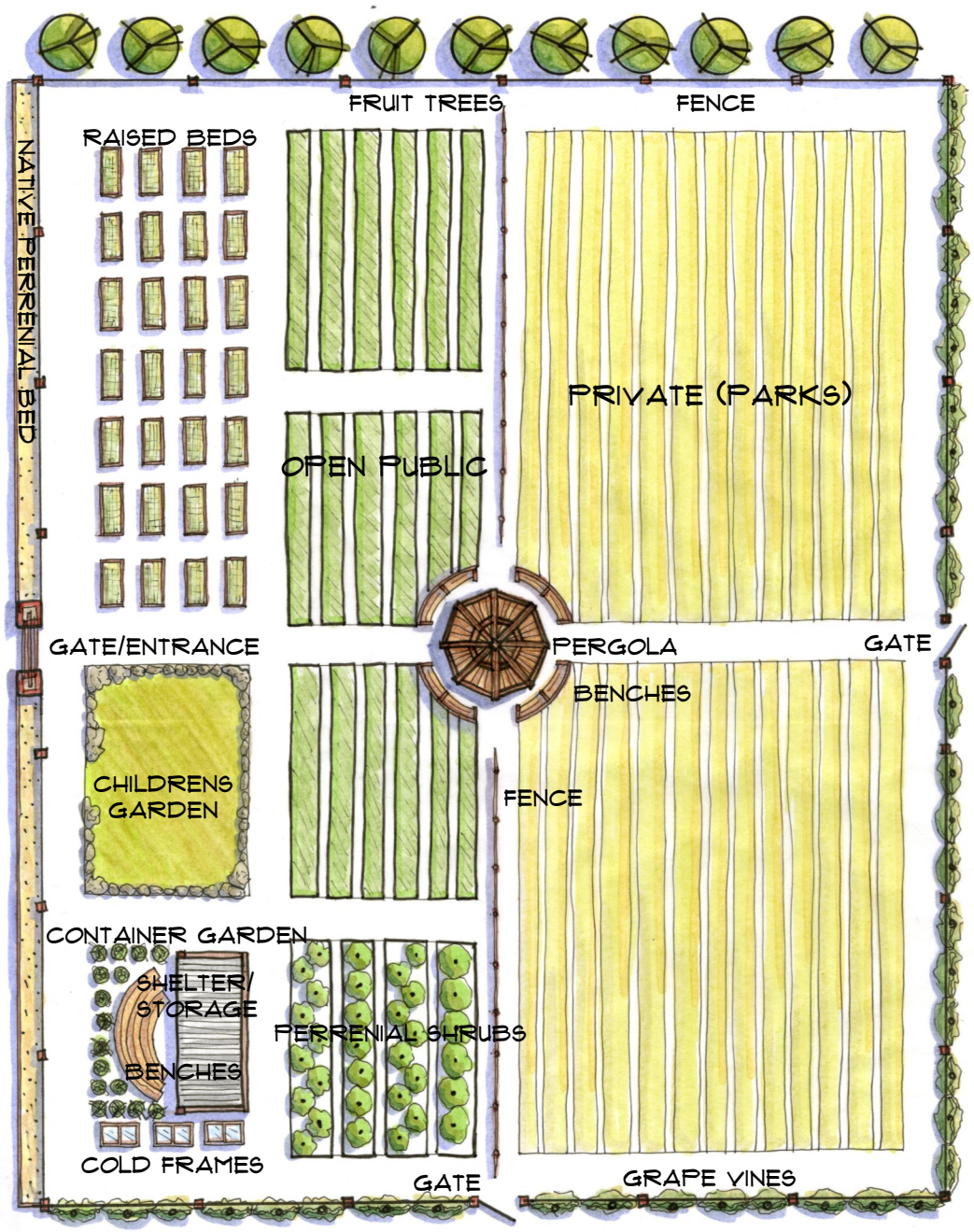


Sunset Road Plaza

# Community Garden (proposed)

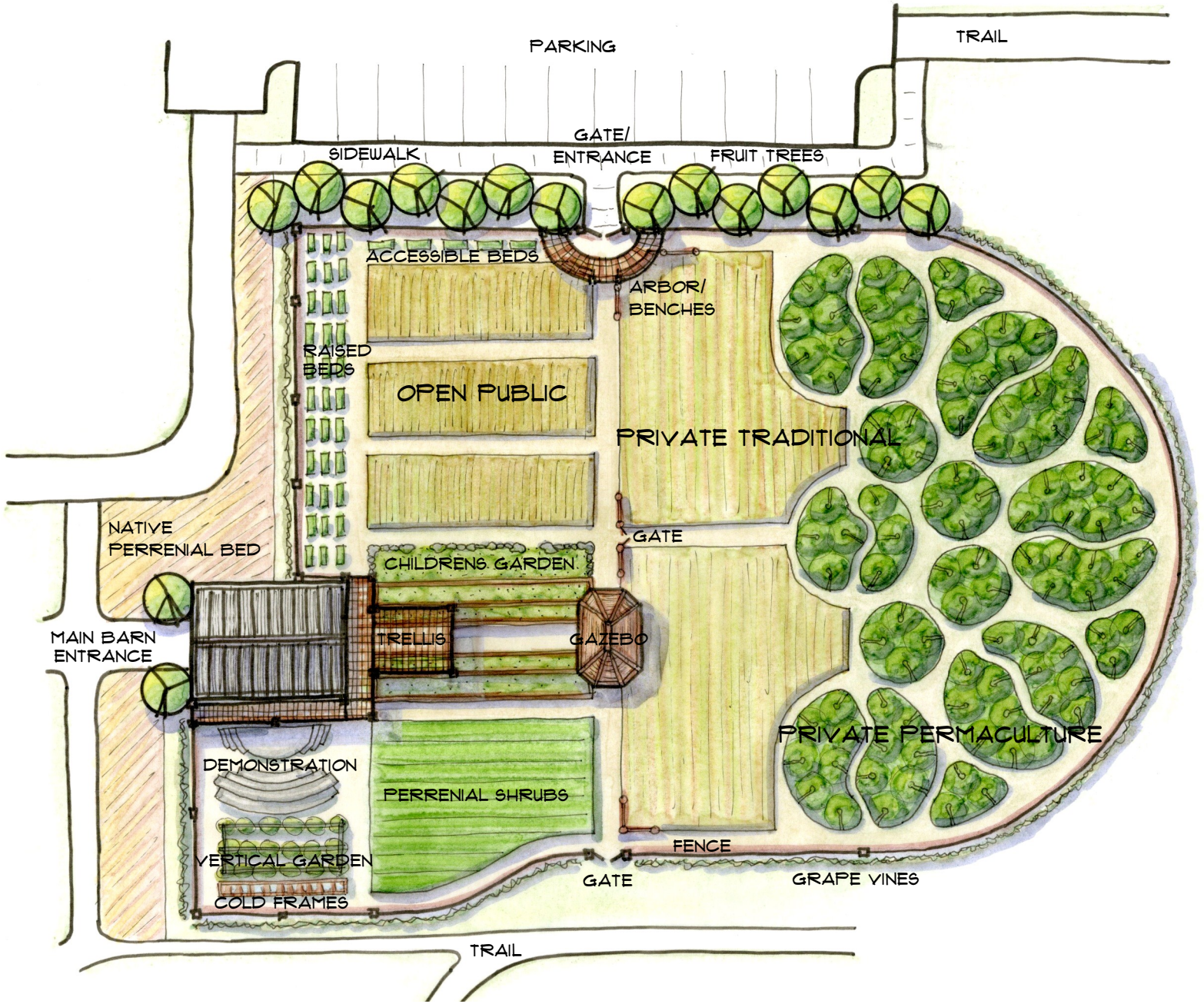
NORTH




The community garden at Sunset Hill is currently being relocated to a new location. The proposed plan on the left was done by the horticulturalist with the parks system, and the plan on the following page demonstrates how those same elements could be arranged in a manner that uses the available space more efficiently to get more yields out of the land. The second plan does this by incorporating some polyculture techniques. Upgrades will be made to all the amenities in the garden .

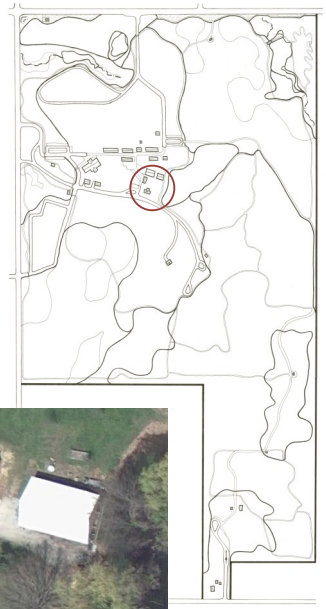
Existing Community Garden: Old Location

# COMMUNITY GARDEN (POTENTIAL)



# Edible Home Garden

NORTH

Existing Layout: Tree Canopy with Lawn Understory

Super Intendants House: Existing Front Yard

# Harvest Calender

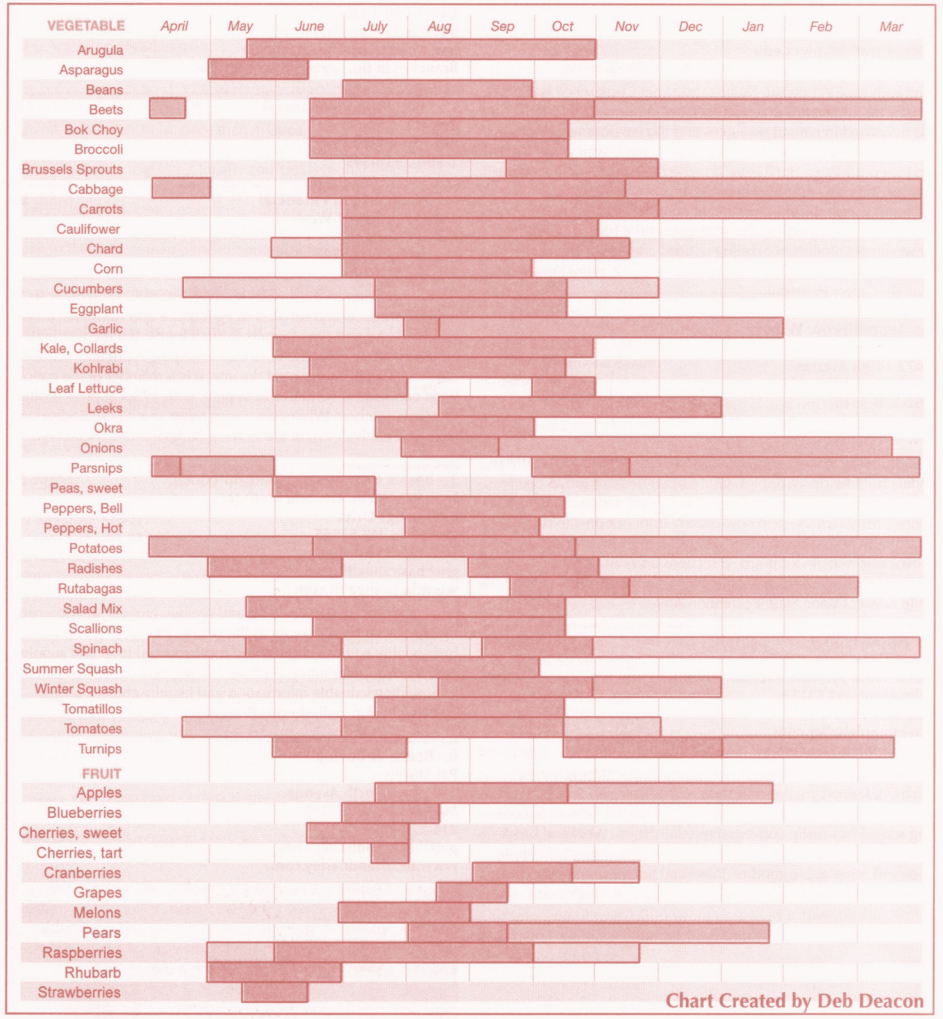
## ANNUAL HARVEST CALENDAR

| | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov |
|---|---|---|---|---|---|---|---|---|
| Apples | | | | ■ | ■ | ■ | ■ | |
| Asparagus | ■ | ■ | ■ | | | | | |
| Beets | | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Blackberries | | | ■ | ■ | ■ | | | |
| Blueberries | | | | ■ | ■ | ■ | | |
| Broccoli | | ■ | ■ | ■ | | ■ | ■ | |
| Brussel Sprouts | | | | ■ | ■ | ■ | ■ | |
| Cabbage | | ■ | ■ | ■ | ■ | ■ | ■ | |
| Cantaloupe | | | | ■ | ■ | ■ | ■ | |
| Carrots | | | | ■ | ■ | ■ | ■ | ■ |
| Cauliflower | | ■ | ■ | | | ■ | ■ | |
| Cherries | | | ■ | ■ | | | | |
| Collards | ■ | ■ | ■ | | | ■ | ■ | ■ |
| Eggplant | | | | ■ | ■ | ■ | | |
| Grapes | | | | ■ | ■ | ■ | ■ | |
| Green Peas | ■ | ■ | ■ | | | | | |
| Hot Peppers | | | | ■ | ■ | ■ | | |
| Lettuce | ■ | ■ | ■ | | | ■ | ■ | |
| Lima Beans | | | | | | ■ | ■ | |
| Mushrooms | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Onions (dry) | | | | ■ | ■ | ■ | ■ | ■ |
| Peaches | | | ■ | ■ | ■ | ■ | | |
| Plums | | | | ■ | ■ | | | |
| Potatoes | | | | ■ | ■ | ■ | ■ | |
| Pumpkins | | | | | | ■ | ■ | |
| Radishes | ■ | ■ | | | | ■ | ■ | |
| Raspberries | | | ■ | ■ | ■ | ■ | | |
| Snap Beans | | | ■ | ■ | ■ | ■ | ■ | |
| Spinach | ■ | ■ | ■ | | | ■ | ■ | |
| Strawberries | | ■ | ■ | | | | | |
| Summer Squash | | ■ | ■ | ■ | ■ | ■ | ■ | |
| Sweet Corn | | ■ | ■ | ■ | ■ | ■ | | |
| Sweet Peppers | | ■ | ■ | ■ | ■ | ■ | | |
| Tomatoes | | ■ | ■ | ■ | ■ | ■ | | |
| Turnips & Greens | ■ | ■ | ■ | | | ■ | ■ | ■ |
| Watermelon | | | | ■ | ■ | ■ | ■ | |
| Winter Squash | | | | | ■ | ■ | ■ | ■ |

Special Note on Availability: Local weather may affect harvest dates from one year to the next. Many fruits and vegetables are available beyond the indicated harvest periods through modern storage techniques and facilities.

## Seasonal Availability of Wisconsin Produce 29

The bars represent average dates of harvest and availability which can vary with such factors as weather conditions, farm location, and varieties grown.

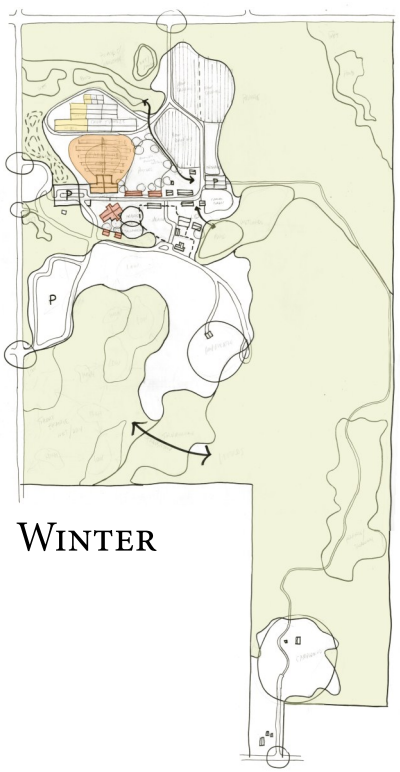



Year round Wisconsin foods include meats, poultry, cheese, eggs, milk, dry beans, mushrooms, popcorn, hickory nuts, maple syrup, honey, and sorghum.

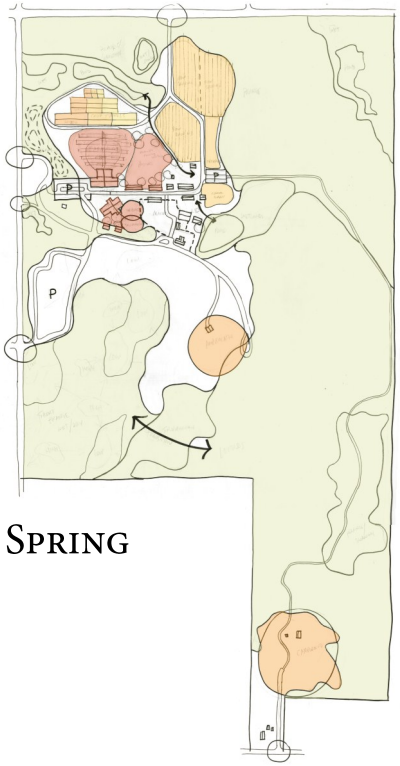
HARVEST SEASON | EXTENDED SEASON | AVAILABLE FROM STORAGE

*Make your reservation for The Farm Fresh Atlas™ of Southeastern Wisconsin Fundraiser Dinner, Sept. 15, 2012*

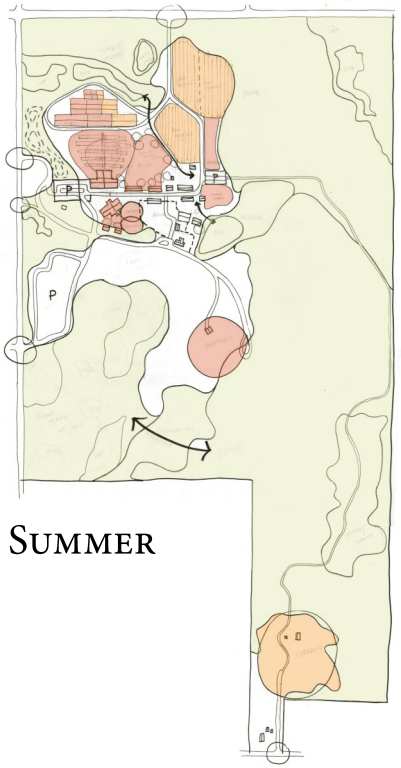
# Seasonal Production/Activity



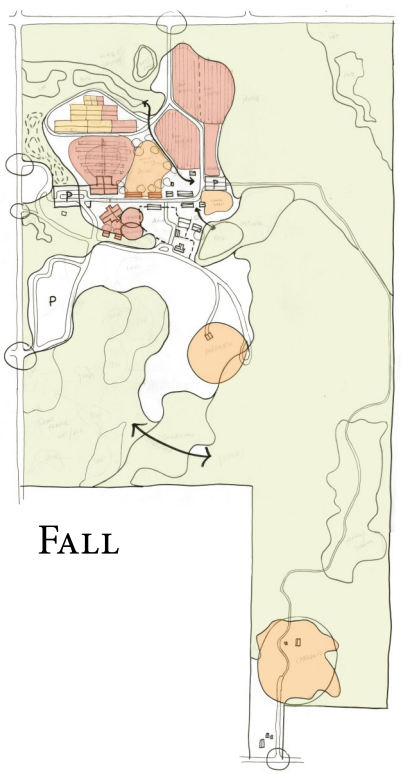
Winter



Spring



Summer



Fall

# Potential Total Yields

| | QTY. | AREA (SQ. FEET) | AREA (ACRES) | ANNUAL YIELD (LB/FT^2) *1 | ANNUAL YIELD (LB/FT^2) *2 | ANNUAL YIELD (LB/FT^2) *3 | ANNUAL YIELD (LB/FT^2) *AVERAGE | ANNUAL YIELD (SERVINGS/ACRE) *AVERAGE | PEOPLE SERVED PER YEAR** (AVERAGE) |
|---|---|---|---|---|---|---|---|---|---|
| Farm size | | 653,400.00 | 15.00 | 280,962.00 | 290,763.00 | 4,998,510.00 | 1,855,656.00 | 7,422,624 | 929.55 |
| **TOTAL** | | **653,400.00** | **15.00** | **280,962.00** | **290,763.00** | **4,998,510.00** | **1,855,656.00** | **7,422,624** | **929.55** |
| | | | | | | | | 494841.6 | |
| *BASED ON THE FOLLOWING CASE STUDIES: | | | | | | | | | |
| 1: INDY URBAN ACRES .43 | | | | | | | | | **140.70** |
| 2: THE CALCULATION GIVEN .445 | | | | | | | | | **145.50** |
| 3: GROWING POWER 7.65 | | | | | | | | | **2,503.50** |
| 4: AVERAGE 2.84 | | | | | | | | | **929.55** |
| **BASED ON THE CALCULATION: | (SERVINGS CONSUMED ANNUALLY)*(POPULATION)-(SERVINGS/FT^2)*(AREA)= PEOPLE FED | | | | | | | | |

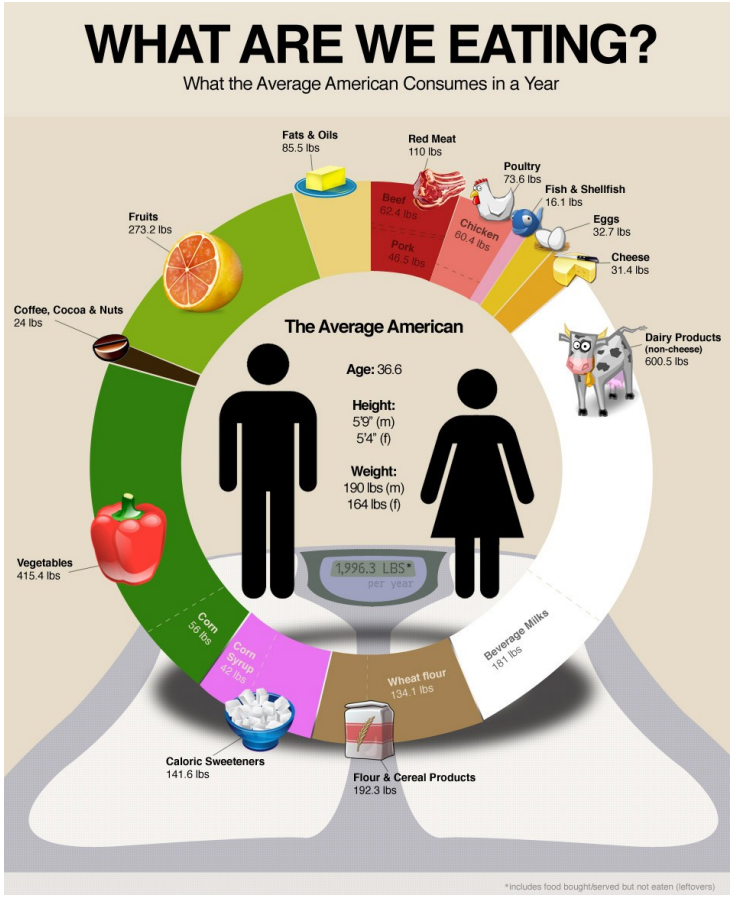
## Breaking Down the Numbers, What do they mean?

Average Serving Size: 4 oz.
1 lbs. = 16 oz. (4 servings per lbs.)
Average Person Consumes **1996.3 lbs./year (7985 servings/year)**

Site's Food Producing Land: approx. **15 acres (653,400 sq. ft.)**
lbs./sq. ft. produced: **2.84 lbs./sq. ft. (range: 0.43-7.65 lbs./sq. ft.)**

Equation: **1996.3p - 2.84x = F**
**p = population of people in targeted area**
**x = number of square feet on producing food**
**F = amount of food not produced to meet all needs**
**(if 0 is reached, then 100% of people are being fed for the year**

Percent of Local Population Feed
Liberty Township Population: **9,319 people**
Township Consumes: **18,603,519.7 lbs./year**
Site Produces: **1,855,656 lbs./year (7,422,624 servings/year)**
Site Serves: **929.5 people/year (10% of population)**



## Food Production Zone

As demonstrated in some of the plans from the previous pages there are many different physical forms that food production can take on. All of these systems tie back to one thing that is important to remember when introducing a new use to a piece of land; how it affects the natural environment. In order for future agriculture systems to be successful they must be sustainable and respect the natural environment.

As the previous slide began to touch on, the ten (10) acres of land on the park that are being farmed, it could feed 10% of liberty townships population. That means if there was just another nine (9) ten (10) acre farms in the township they could provide enough food in a year to support the entire population on a completely vegetarian diet. The park is 238 acres, which means that the park could potentially feed the entire township by itself if that was the desired goal. This does not even begin to touch on the possibility of people producing food at home, like demonstrated in the at-home garden plan. There is vast potential to actually feed the world and stop hunger if our society adapted a new form of agriculture.

# 3.9.3 : Recreation Zone Detail Design

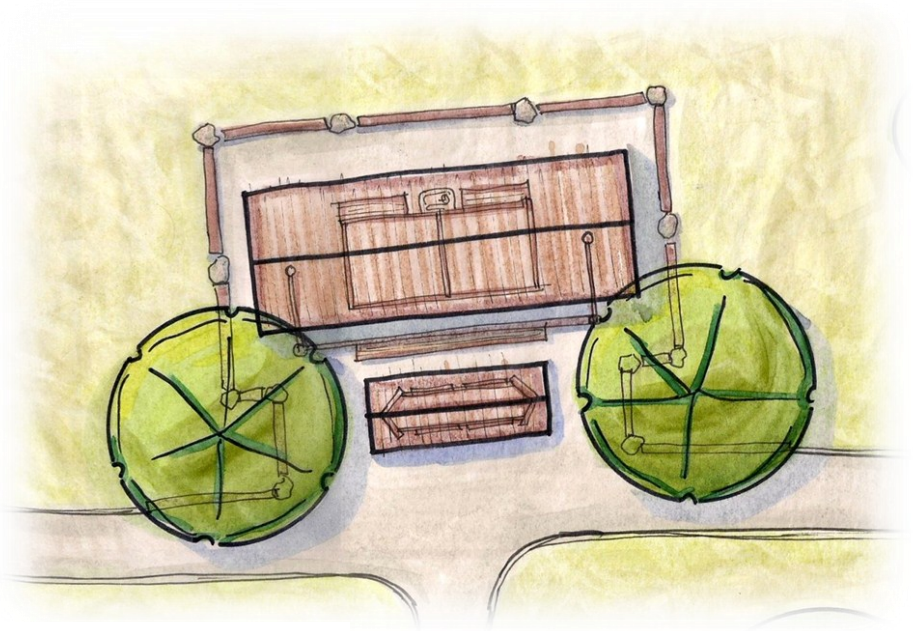
Being a public park as part of Porter County's park system, the main objective of the park is to meet the communities recreational demands. The largest user group of the park is its runners. The trails are extremely popular and well kept up. The Valparaiso High School cross country team uses the park as their home course. Because this park is part of a larger system, it does not have to have every kind of recreational activity. The other parks in the system have the ball fields and more traditional activities, which allows Sunset Hill to take advantage of the more nontraditional outdoor recreational activities, like camping. The amphitheater is also part of the recreational opportunities on the park. In the future fishing could be another one. Because the park is so ecologically diverse it allows park users the opportunity to experience things that they cannot experience in their own backyards.

The trails are in good condition, but the amenities for them are lacking. Just like the other activities within the park, the extra stuff like restrooms, water fountains, and places to sit are all absent. The new developments in the park would include upgrades to all the additional amenities. The necessity of these features will be critical with a leg of the county-wide Dunes-Kankakee Trail being brought through the site, as it will bring a large increase in park usership.

The other aspect of the recreation and entertainment zone of the park is the festivals. The park hosts various large festivals throughout the year, which gives every season something to highlight the park in the community. This is a feature that will be beneficial to build off of. The areas around the large parking area and amphitheater will serve as the space where these activities take place.

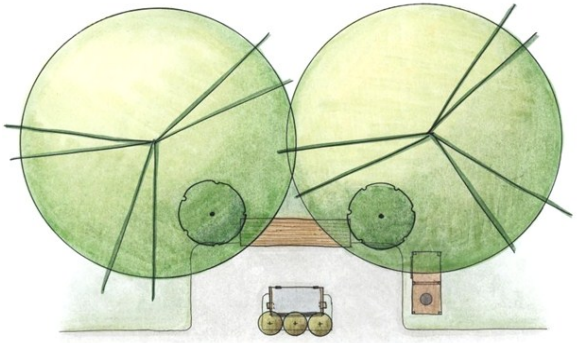
# Trail Head Concepts

Level 3 Trail Head

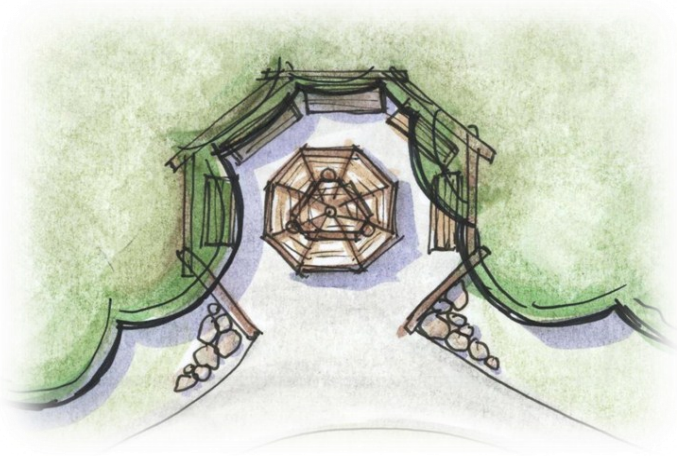


Level 2 Trail Head

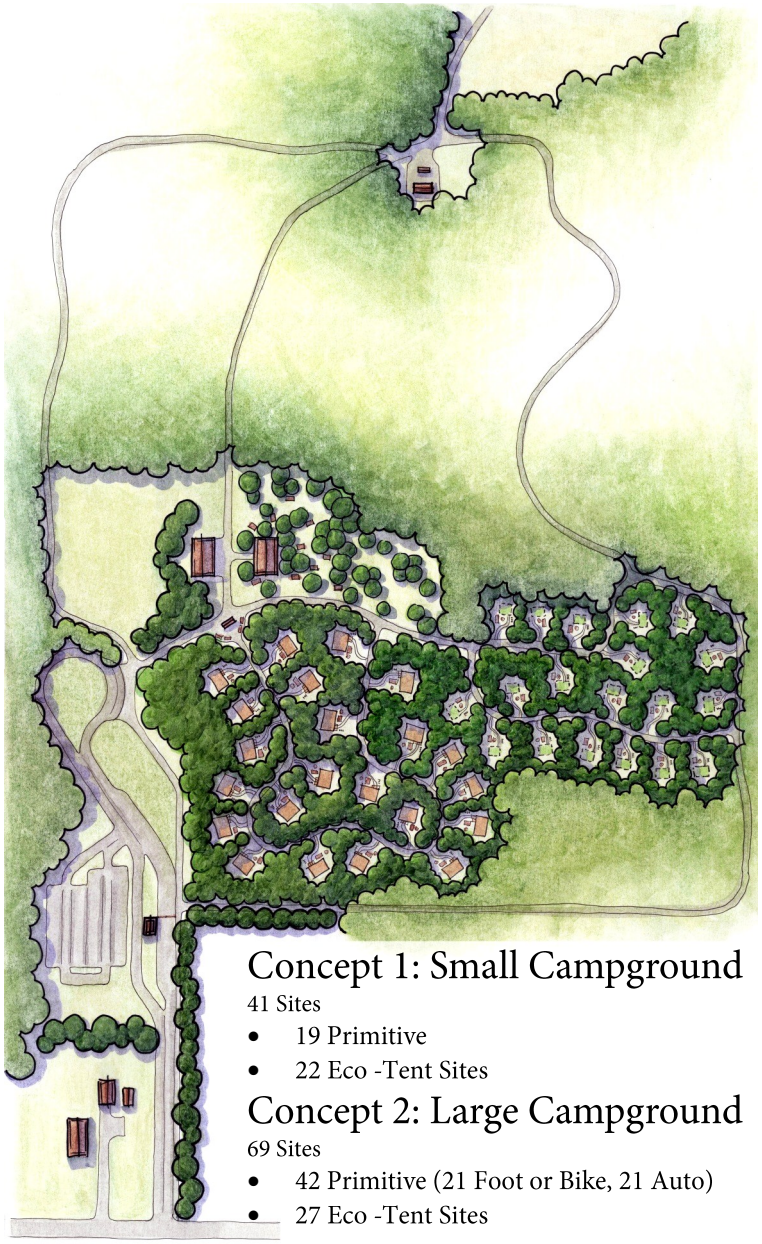
Existing Trail Heads



Level 1 Trail Heads



# Campground Layout Concepts



## Concept 1: Small Campground

41 Sites

- 19 Primitive
- 22 Eco -Tent Sites

## Concept 2: Large Campground

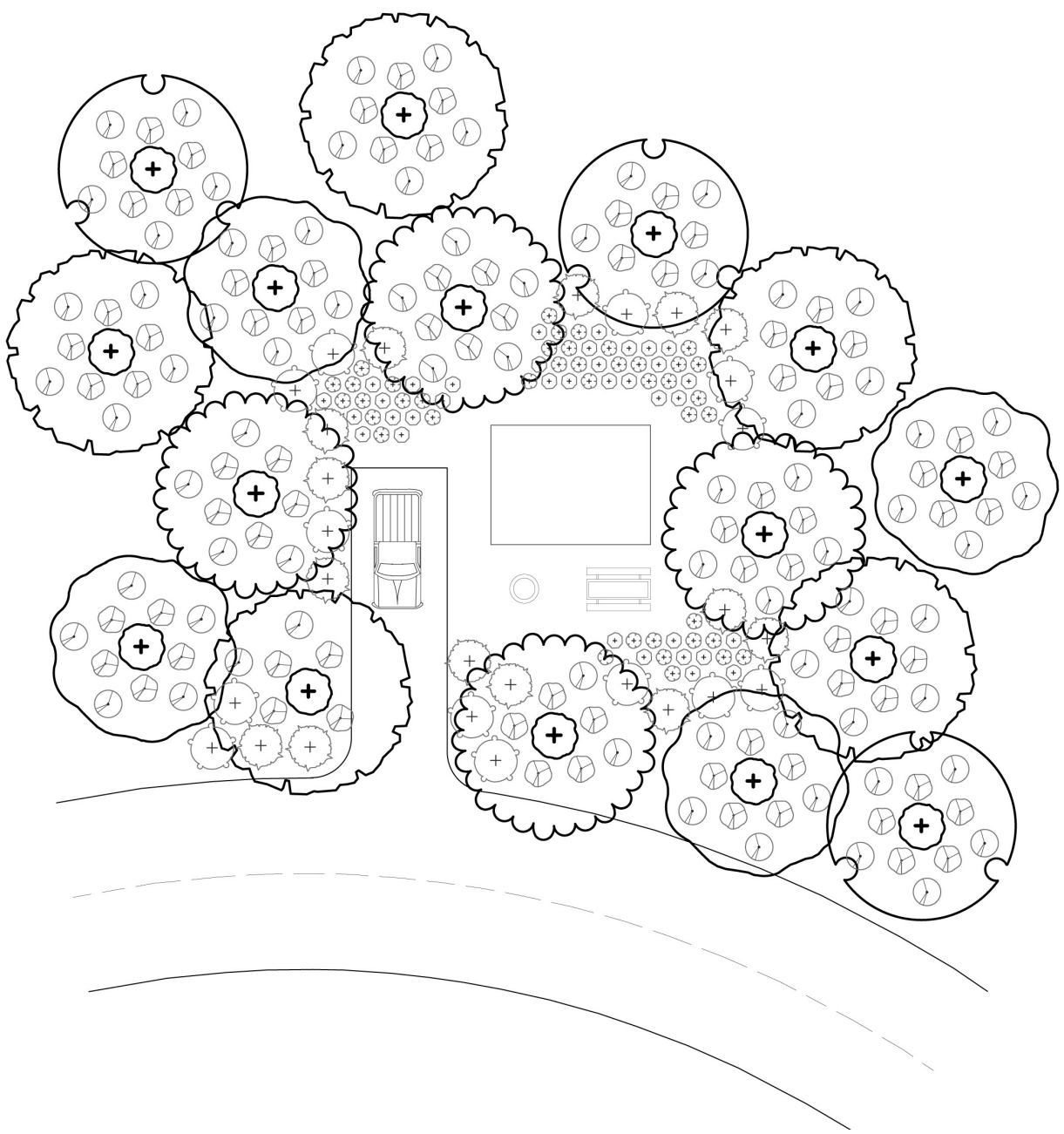
69 Sites

- 42 Primitive (21 Foot or Bike, 21 Auto)
- 27 Eco -Tent Sites



Eco Structures Global:
Eco Canvas Tents

# Edible Guild Planted Campsites



KEY

Fruit Tree (Apple)

Nut Tree (Walnut)

Nitrogen-Fixing (Locust)

Connecting/ Compliment Tree (Mulberry)

Grass Suppressing Bulbs

Berry Bush

Flowering Shrub

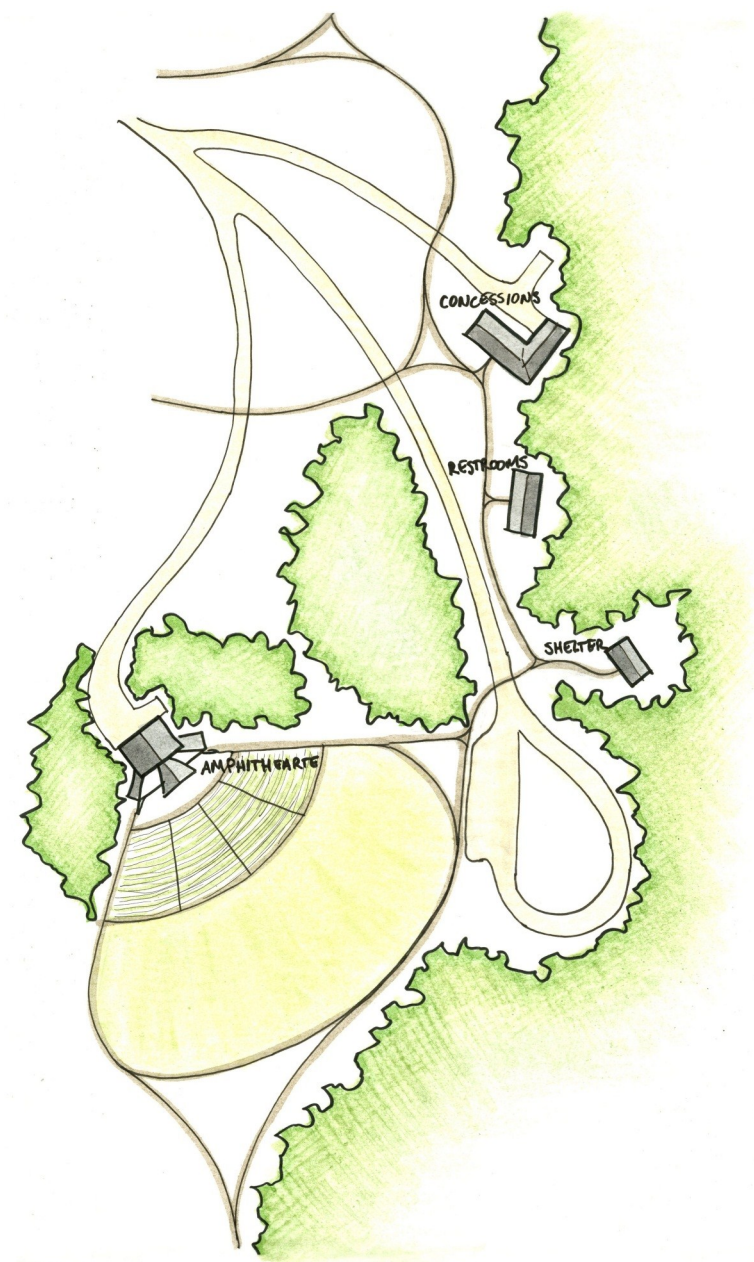
Insectary/Nutrient Accumulators

Mulch Plants

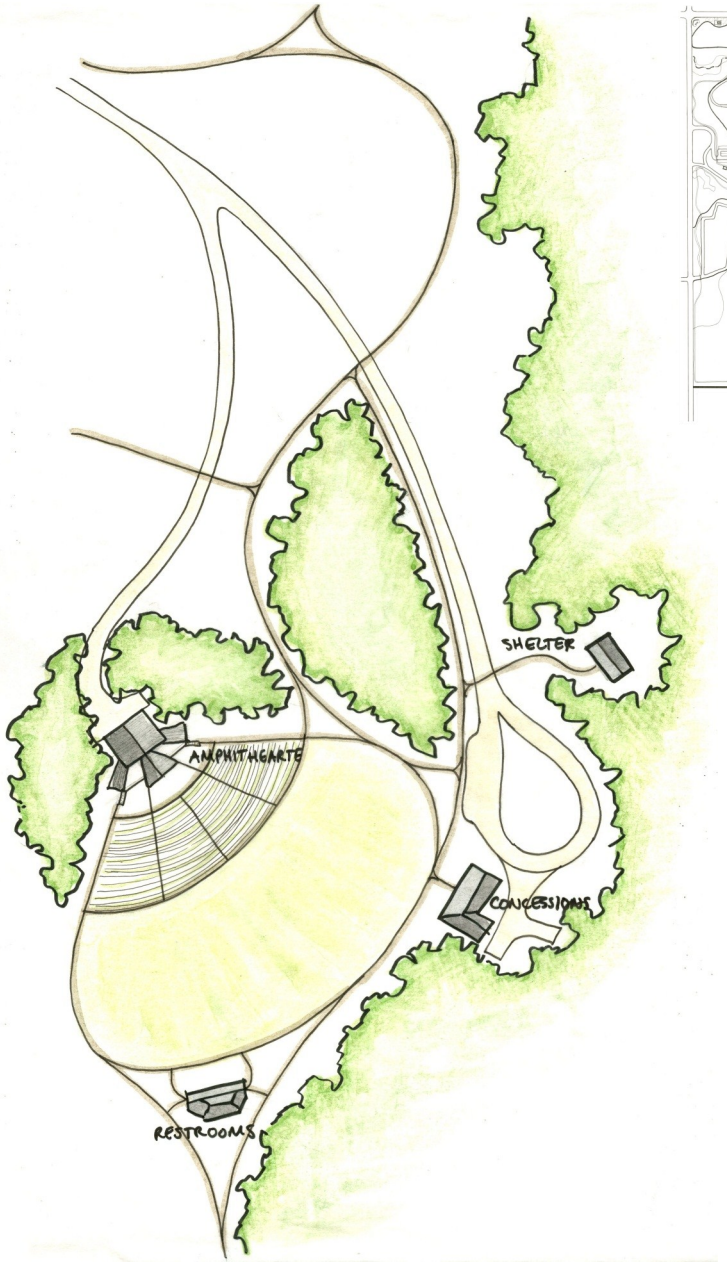
Flowering Plant

Vegetable Plant

# Amphitheatre Layout Concepts

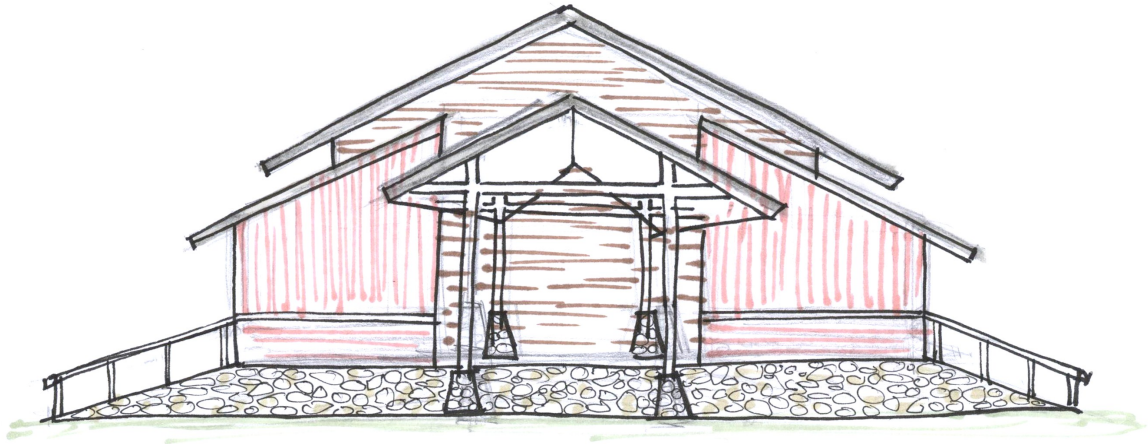



Concept 1: Sunset Hill Amphitheatre

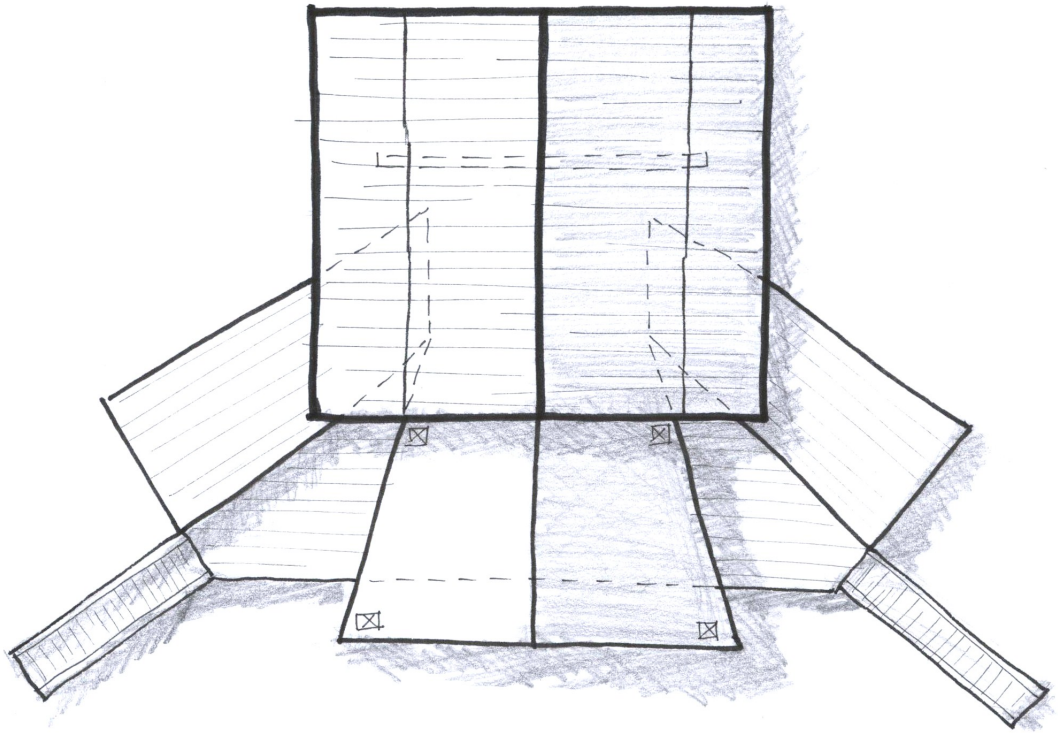



Concept 2: Sunset Hill Amphitheatre

# Bandshell Renovation



Renovated Bandshell Elevation



Renovated Bandshell Plan

The current bandshell is located at the bottom on Sunset Hill, the hill that the park is names after. There is approximately a twenty foot drop from the top to the bottom. The area is large enough to potentially hold a shows that could accommodate shows in the 2,000-3,000 person range. A redesigned amphitheater could bring people from afar and be a large revenue generator for the parks system.

## Recreation/Entertainment Zone

The concepts that were shown on the previous pages are meant to generate discussion and interest in the development of the park. These are drawings that the park has used to gain feedback from the public on what they would like to see develop within the park. The public meetings where these drawings were used helps to continue the development of the parks master plan. The initial focus is on the recreational activities in the park to increase the use and popularity of the park. This will allow the park to develop more detailed visions later.

The campground is an interesting case because the park is so close to the Indiana Dunes, during the busy season the park would be able to take in the people that were turned away there because they were at capacity. Within the campground there is the opportunity to differentiate it from the other campgrounds in the areas. Incorporating more sustainable practices and experiences can be used to sell it to potential visitors. Developing something more than just primitive campgrounds that are only really used by Boy Scout troops, would make the park appealable to families. Carrying the food production into this area also would separate it from other campgrounds. Developing edible guild planting as buffers creates a unique experience for people staying on the site.

# Conclusion

This projects mission was to analyze a historically and culturally significant landscape in order to be able to determine how to apply that character to an up-to-date, sustainable plan for expanding and enhancing Sunset Hill Farm County Park in Porter County, Indiana. This project is meant to provide a landscape that better serves the needs of the community while preserving, protecting, and managing the natural, cultural, and recreational resources within the park. Through these discoveries a plan was developed and illustrated that could potentially be used as framework for other communities in the Midwest that face similar situations with their public entities.

There are many issue that face our society but I do not feel that there is one greater than that of food security. People have been fighting hunger for centuries and the path our society is currently on will not resolve this problem. The population of the world continues to grow, the resources continue to be depleted, and our natural support structure continues to decline. The time is now for us to make this behavioral and structural shift to a more sustainable society.

The industrial agriculture system is proving to be a failure and if we continue to go down this path until it completely collapses we may not be able to climb out of the hole which we created. Nature is resilient and will certainly prevail when we do not, but it is time to start taking lessons from its systems to be able to structure our future growth around the organizational patterns of the natural world.

There are an innumerable amount of studies that show what we eat greatly impacts the type of people we are. Our relationship with food is the most intimate connection we have. It all starts at the individual level. Make a change for the better. Every purchase you make in the store is a vote for what you want in our society. Don't vote for genetically modified products with hormones and antibiotics as the base of its structure. Buy organic, buy local, be sustainable. Help to create a better world.

## Sunset Hill Farm and Park: A Better Park, A Better Life.

### Creating a Healthy and Sustainable Future

# Section Four :
# Appendices

# 4.1 : Appendix A : Timeline

Pre-Semester: December 15th - January 6th

- Gather site photos, conduct initial interviews and first consultations with outside professionals, gather current and past data and maps for the site and its context.

Week 1: January 7th - January 13th

- Have initial consultations with faculty advisor, continue and complete inventory and analysis maps, vicinity and location maps.

Weeks 2-4: January 14th - February 3rd

- Produce 3-4 design concepts, addressing connectivity beyond the site, site master plan, and specific activity areas, and have reviewed by professionals and advisors.

Weeks 5-6: February 4th - February 17th

- Determine final concepts, continue research on specific design features,hold secondary consultations, and produce schematic design alternatives for all three scales of design.

Week 7: February 18th - February 24th

- Hold reviews with professionals and advisors to make any final recommendations before beginning work of final designs and drawings.

Weeks 8-11: February 25th - March 24th

- Conclude any research on the design of specific features of the park, make final revisions and produce final drawings including plans, sections, perspectives, details, construction documents, etc.

Week 12: March 25th - March 31st

- Begin preparation of final documents and presentations with input from advisor.

Weeks13-17: April 1st- May 5th

- Edit and produce the final board and book, and give presentations on the final project.

# 4.2 : Appendix B : Definitions

- Semi-Rural Context refers to a level of development for the land around the focus area in which the density and character act as a transitional zone of residential and commercial reflecting some facets of urban city life and rural country life.

- A Development Plan is a form of organization that directs the growth of a defined area using specific design goals and guidelines to allow that area to function effectively over a long period of time.

- Porter County Department of Parks and Recreation is a branch of government in Northwest Indiana that is in charge of running and maintaining local public land where outdoor education and activities can occur.

- A Regional Destination is a location that has features unique and developed enough to draw a much larger user group beyond just residents living within the sites immediate context.

- Sustainable refers to a philosophy of life that addresses maintaining a balance between human needs and desires with nature's ecological demands, so that all involved parties can have longer, healthier lives for generations to come.

- A Cultural Landscape is a site typology with a unique past directly influenced and shaped by people who used to occupy that piece of land, and has been identified as a place worth preserving because it will contribute something to future generations.

- LEED (Leadership in Energy and Environmental Design) is a rating system that recognizes and rewards certifications for green building that follow a set of standards and guidelines addressing energy and water usage, material selection, environmental quality, and sustainable site development.

- SITES (Sustainable Sites Initiatives) is a set of guidelines and a rating system created by a collection of agencies to set benchmarks for determining how sustainably designed, constructed, and maintained a project is.

- Natural Fabric refers to a larger interconnected system of wildlife habitats and corridors linked together by various environmental features that create connections over vast areas of land.

- Urban Fabric refers to a large interconnected system of man-made environments and networks that link people and places together over vast areas of land.

- Accessibility is the implementation of specific design standards to allow every person, specifically those with physical disabilities, an equal experience of a site by adapting features so that they can be reached by all users.

- Landscape Restoration is a type of construction to recreate a natural habitat or environment which has degraded over time, to its original or a previous state.

- Quality of Life refers to the state of mind about a person's overall satisfaction with their life, determined by their outlook on their own standard of living and level of enjoyment.

- Historical Character is a type of aesthetic quality that tells the story of a site's past through the use of tangible features that represent and evoke emotions of local history.

- Stormwater Management is a process of planning, collecting, and treating excess precipitation to reduce the amount of pollution, erosion, and other environment-altering conditions linked to aquatic systems.

- Air Quality is a measurement of pollutants and overall cleanliness of the air in an identified area to determine what health effects that air will have on the people who breathe it.

- Water Quality is a measurement of chemicals and bacteria in an identified aquatic network to determine how safe that water is for people and wildlife that will be consuming and/or interacting with it, directly or indirectly.

- A Primitive Campground is a designated site for on-foot backpack campers and activities directly related to their needs, but lacks defined features that determine where and when those activities take place, often without electricity and plumbing.

# 4.3 : Appendix C : Site Photos

Community Garden, Raised Beds


Sunset Road, West Entrance

Typical Pond Conditions

Childrens Playground


Route 6/Meridian Intersection, Park Sign

Woodland Trails

Grass Trails

Farm Animal Houses

Campground Restroom Facility

Agricultural Fields Off Route 6

Maintenance/Office Building

Amphitheater

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